

MASTERING AWS WITH EDUREKA

Getting Started with Amazon Web Services



TABLE OF CONTENTS

1. INTRODUCTION TO AWS	3
What is Cloud Computing?	
What is Amazon Web Services?	
AWS Service Domains	
2. AWS COMPUTE SERVICES	6
AWS EC2	
AWS Elastic Bean Stack	
3. AWS STORAGE SERVICES	9
AWS S3	
AWS EBS	
4. AWS NETWORK SERVICES	12
AWS VPC	
AWS CloudFront	

TABLE OF CONTENTS

5. AWS SECURITY SERVICES	15
AWS IAM Services	
AWS Shield	
6. TOP 20 INTERVIEW QUESTIONS	18
Interview Questions for Beginners	
Interview Questions for Professionals	
7. CAREER GUIDANCE	19
How to become an AWS Professional?	
How to prepare for AWS Job Roles?	
Edureka's Structured Training Programs	
8. FREE RESOURCES	22

Chapter 1

INTRODUCTION TO AMAZON WEB SERVICES



The world has witnessed an unprecedented growth of Cloud Computing over the last half of the decade and the trend continues to tilt in a positive direction. With this, we have seen the rise of many cloud service providers. Leading the pack in the race is Amazon Web Services. This E-Book will explore Amazon Web Services in detail.

1.1 What is Cloud Computing?

The rise of the Internet has led to a boom in the IT industry, software development and hosting in general. Some of the major concerns that modern-day software industry faces are listed below:

- Optimizing costly server setups
- Monitoring and governing complete infrastructure
- Taking care of security
- Conveniently scaling up and down

What if someone else could do it for you? And you could consume all the services just by paying a minimal charge for it. Well, Cloud or [Cloud Computing](#) does exactly that for you! It orchestrates all the above-mentioned tasks, while you just pay for the services.

In simple words, Cloud Computing is the process of Orchestrating storage, computation and retrieval of data to optimize and simplify the process of Computing over a huge space online (i.e. a wide network of data centers).

1.2 What is Amazon Web Services?

Amazon Web Services (AWS) is a cloud service provider from Amazon, which provides services in the form of building blocks. These building blocks can be used to create and deploy any type of application in the cloud. These services or building blocks are designed to work with each other, and result in applications that are sophisticated and highly scalable.

It operates in **200+** regions across the world and has the highest Public Cloud market share. AWS offers a free tier account for 12 months, where you can refer and use AWS core services for free.



Pricing

Consistency & Reliability



Scalability



Customization

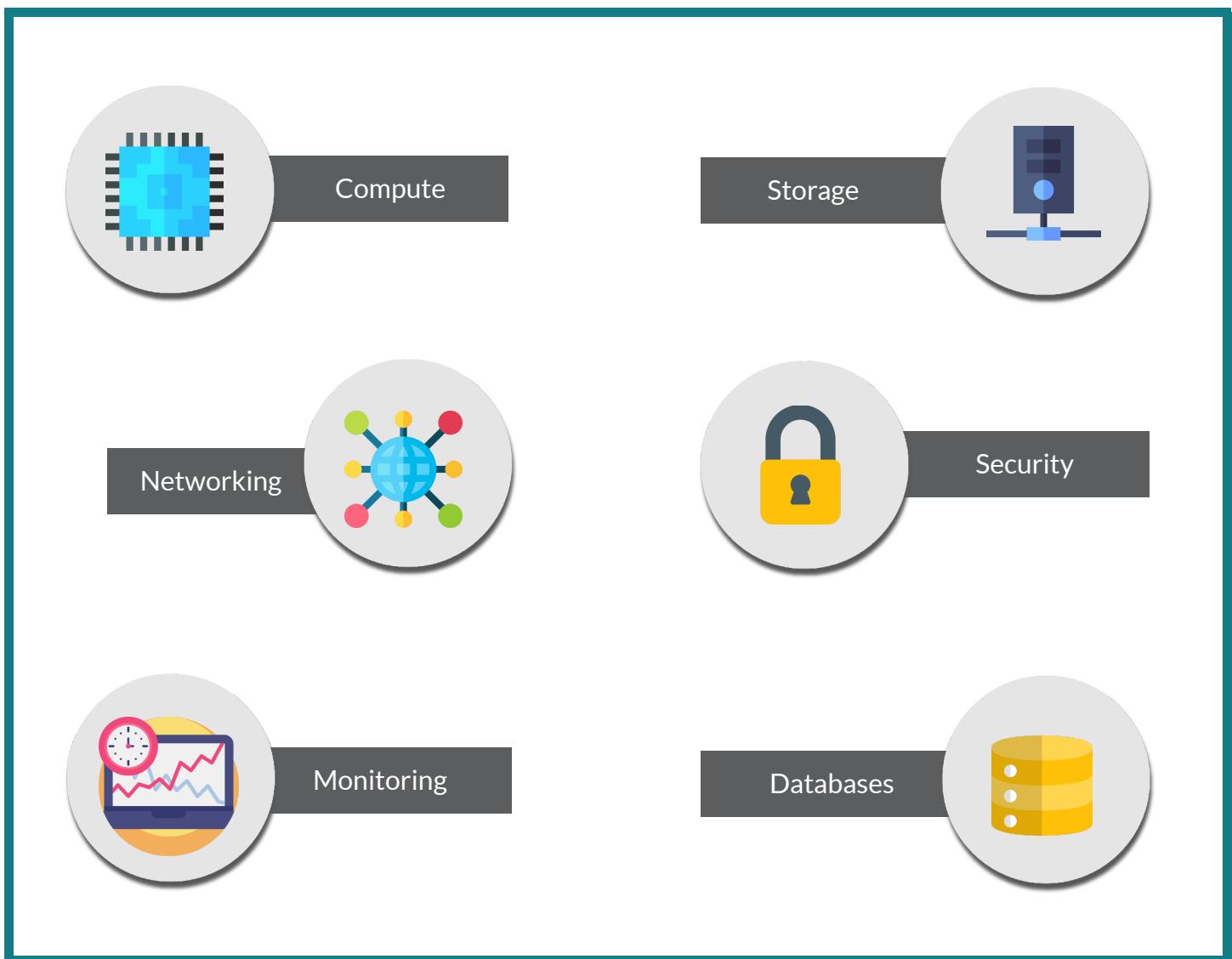


Security

AWS
FEATURES

1.3 AWS Service Domains

AWS offers **150+** [AWS services](#) that serve different verticals. It can be difficult to keep a track of these services. Hence AWS Classifies these services in different domains. Following are some of the popular domains:



Chapter 2

AWS Compute Services

AWS Compute Services are used to process data on the cloud by making use of powerful processors that serve multiple instances at a time. AWS offers different types of Compute Services that serve different purposes. Here is the list of Compute services that AWS offers:

AWS EC2

It offers resizable and Secure compute capacity (instances) in the cloud



AWS LAMBDA

It helps in implementing the code without having to worry about servers



AWS ELASTIC BEANSTALK

It is a PaaS offering provided by AWS where the service sets up the platform for us



AWS LIGHTSAIL

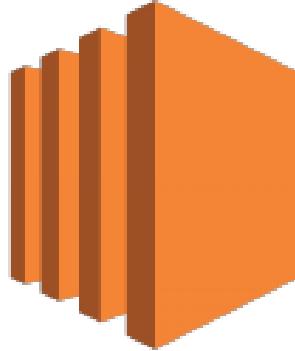
It is an easy to use VPS and a suit of tools to build an application or website with ease



Let's take a closer look at a few of the major Compute Services in AWS.

2.1 AWS EC2

Amazon Elastic Compute Cloud, EC2 is a web service from Amazon that provides resizable compute services in the cloud. They are resizable because you can quickly scale up or scale down the number of server instances you are using if your computing requirements change.



Now let us learn how can we create and launch an AWS EC2 instance and set up a connection.

A screenshot of a terminal window titled "ubuntu@ip-10-253-68-44: ~". The window displays system information for an Ubuntu 16.04 LTS instance. The output includes:

```
* Documentation: https://help.ubuntu.com/
System information as of Fri Sep 30 08:47:04 CEST 2016
System load: 0.0          Processes:      77
Usage of /: 20.3% of 7.75GB  Users logged in:  0
Memory usage: 2%          IP address for eth0: 10.253.68.44
Swap usage: 0%
Graph this data and manage this system at:
https://landscape.canonical.com/
Get cloud support with Ubuntu Advantage Cloud Guest:
http://www.ubuntu.com/business/services/cloud
302 packages can be updated.
164 updates are security updates.

*** /dev/xvda1 should be checked for errors **

Last login: Fri Sep 30 08:47:07 2016 from 27.251.249.218
ubuntu@ip-10-253-68-44:~$
```

STEPS

1. Login to AWS Management Console
2. Select your preferred Region
3. Select EC2 Service
4. Click Launch Instance
5. Select an AM & choose an Instance
6. Configure Instance Details.
7. Review and Launch an Instance
8. Create a Key Pair & launch an Instance
9. Convert Your Private Key Using PuTTYgen
10. Connect to EC2 instance using SSH & PuTTY

Congratulations! You have launched an Ubuntu Instance successfully!

2.2 AWS Elastic Beanstalk

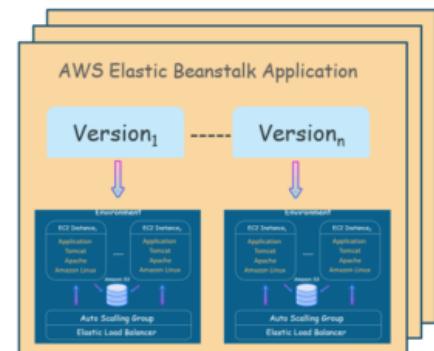
AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS. With AWS Elastic Beanstalk, a developer can deploy an application without provisioning the underlying infrastructure while maintaining high availability.

2.2.1 AWS Elastic Beanstalk Deployment

Following are key concepts necessary for deploying an application on Beanstalk:

APPLICATION

An application is a collection of components including environments, versions and environment configuration.



APPLICATION VERSION

An application version refers to a specific, labelled iteration of deployable code for a web application.

ENVIRONMENT

1. Environments within Elastic Beanstalk Application is where the current version of the application will be active
2. Each environment runs a single application version at a time.

ENVIRONMENT TIER

Beanstalk offers two different Environment tiers: Web Server & Worker Environment

Chapter 3

AWS Storage Services

Cloud storage lets you store your data servers that can be accessed across the globe by using the internet. You can store data in the following format:

- Files
- Process Data
- Messages
- Logs files
- Pictures, videos, etc.

Cloud storage is affordable that lets you take data backups to ensure your data is safe and is present on the cloud.

3.1 AWS Storage Services

AWS offers numerous services that provide various ways to store your data on AWS Cloud. Some of the popular storage services are listed below:

- Amazon EBS
- Amazon S3
- Amazon EFS
- Amazon Glacier
- Amazon Snowball

Amazon offers the following kinds of storage namely, Block, Object and File.



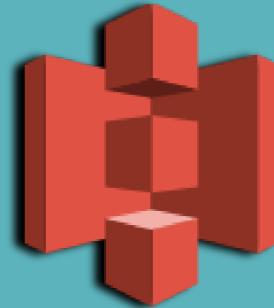
Let's take a closer look at a few of the major Storage Services in AWS.

3.2 AWS S3

Amazon Simple Storage Service (S3) is a storage for the internet. It is designed for large-capacity, low-cost storage provision across multiple geographical regions. Amazon S3 provides developers and IT teams with Secure, Durable and Highly Scalable object storage. It is a hot storage ensuring quick retrieval of data.

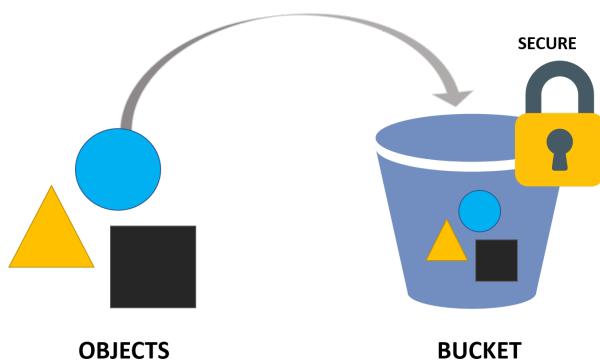
It offers the following features:

- Cross-Region Replication
- Versioning
- Life-Cycle Policy
- S3 Transfer Acceleration
- Bucket Policies



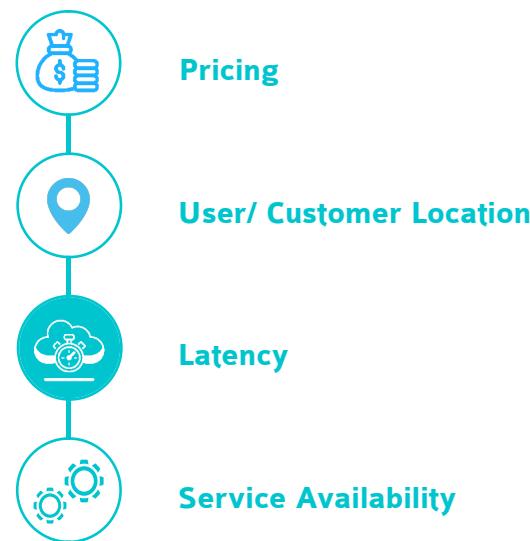
3.2.1 How is Data Organized in S3?

- Data in S3 is organized in the form of buckets
- A Bucket is a logical unit of storage in S3
- It contains objects that hold the data and metadata
- Before adding any data in S3, the user has to create a bucket that will be used to store objects



3.2.2 How to Choose a S3 Region?

You can self-choose the region where your data should be stored. Making a decision for the region is important and therefore it should be planned well. Following are the 4 parameters to choose the optimal region:



3.3 AWS EBS

Amazon Elastic Block Store (EBS) is a user-friendly block storage service that runs with very high performance and is used with Amazon Elastic Compute Cloud (EC2) for both throughput and intensive transactions.

A broad range of workloads, such as relational and non-relational databases, enterprise applications, containerized applications, big data analytics engines, file systems, and media workflows can be deployed on Amazon EBS.

Amazon EBS provides various options to enhance storage performance and save cost.



The options are divided into two major categories:

Transactional Workloads

Transactional workloads, such as databases and boot volumes (performance depends primarily on IOPS) have SSD-backed storage.

Intensive Workloads

Throughput intensive workloads, such as MapReduce and log processing (performance depends primarily on MB/s) have disk-backed storage.

Block-level storage volumes for use with EC2 instances are provided by EBS. EBS volumes are like raw, unformatted block devices. Volumes can be mounted as devices on your instances. Multiple volumes can be mounted on the same instance, but each volume can be mounted to only one instance.

3.3.1 AWS EBS Features

- a. High performance for any type of workload
- b. Highly available and durable
- c. Offers six different volumes at customizable prices
- d. Easy to creation & usage
- e. Virtual unlimited scalability
- f. Highly secure

Chapter 4

AWS Network Services

AWS provides a very broad and deep set of networking services that are highly reliable, have great security features, and are known for high-end performance across the globe. Thus ensuring you have the ability to run any kind of workload in the cloud. Here are some of the popular [AWS Networking Services](#):



VPC AWS

Amazon VPC lets you launch AWS resources in a virtual network that you define. It closely resembles a traditional network that you'd operate in your data center.



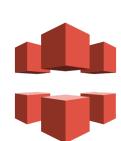
AWS Direct Connect

It helps you establish a private connection between your premises and AWS, therefore giving better network performance and throughput than an internet based connection.



Amazon Route 53

Route 53 is a highly scalable and highly available Domain Name System by Amazon AWS. The name is in reference to the TCP and UDP's port 53 where DNS requests are addressed.



Amazon CloudFront

CloudFront is a content delivery network that is used to cache data to an edge location which reduces latency. It takes the content from S3 bucket and transfers it to different edge locations.

Let's take a closer look at a few of the major Network Services in AWS.

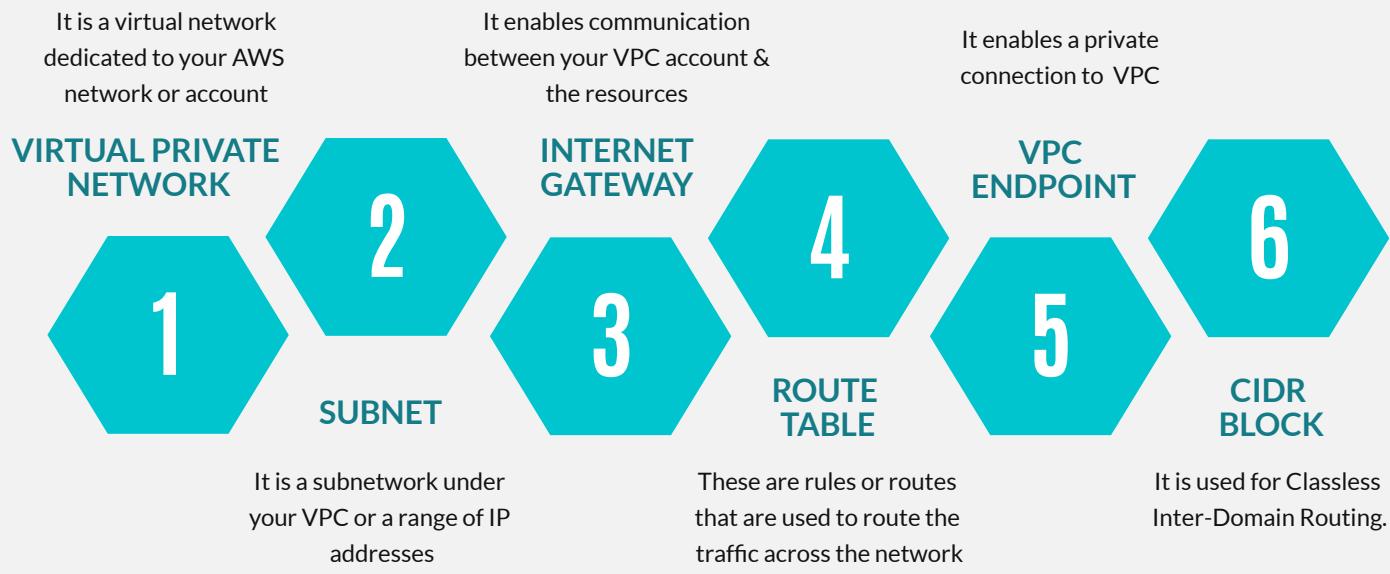
4.1 AWS VPC

AWS provides a lot of services that are sufficient to run your architecture. The backbone for the security of this architecture is [VPC \(Virtual Private Cloud\)](#). VPC is basically a private cloud in the AWS environment that helps you to use all the services by AWS in your defined private space. You have control over the virtual network and you can also restrict the incoming traffic using security groups.



Overall, VPC helps you to secure your environment and give you a complete authority over incoming traffic. There are two types of VPCs, Default VPC which is by default created by Amazon and Non-Default VPC that is created by you to suffice your security needs.

KEY COMPONENTS OF VPC



4.1.1 Creating a VPC

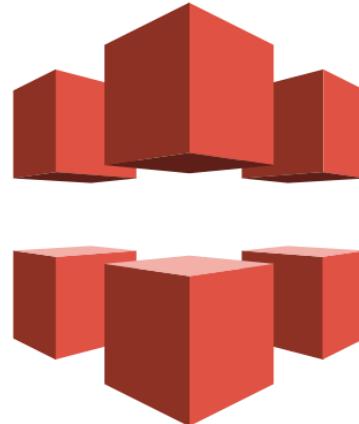
- | STEPS | 1. Navigate to the VPC Dashboard. Click on “Launch VPC Wizard” |
|-------|--|
| | 2. Next Select “VPC with Single Public Subnet” |
| | 3. Fill in the configuration details and click on “Create VPC” |
| | 4. Verify the public subnet |

You will see that a subnet named “Public Subnet” is created. This subnet has a route table attached which consists of local and public access with an Internet Gateway.

4.2 AWS CloudFront

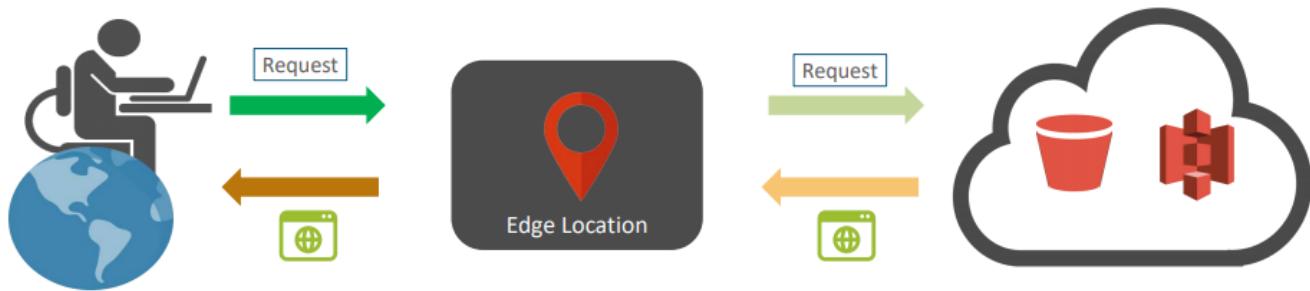
CloudFront is a Content Delivery Network (CDN). It takes the content from S3 bucket and transfers it to different edge locations. Let me explain how it works.

When a user tries to access a website and requests some data. DNS routes your request to the nearest CloudFront edge location to serve the user request.



At edge location, CloudFront checks its cache for the requested files. If found, then returns it to the user otherwise,

- First CloudFront compares the request with the specifications and forwards it to the applicable origin server for the corresponding file type
- The origin servers send the files back to the CloudFront edge location
- As soon as the first byte arrives from the origin, CloudFront starts forwarding it to the user and adds the files to the cache in the edge location for the next time when someone again requests the same file



4.2.1 Features of AWS CloudFront

1. Static Website Content Delivery Acceleration
2. On-Demand Data Streaming
3. Data Encryption throughout Data Processing
4. Customize content at the edge
5. Ability to serve private data with Lambda

Chapter 5

AWS Security Services

Security plays a very important role when we deal with data. Cloud Computing security has always been under scrutiny, with shared security model and a plethora of services that AWS offers in the security domain, it certainly manages to brush aside all the security concerns that are there. Below are some of the popular **AWS Security Services**:

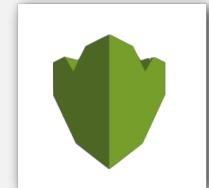


AWS Identity and Access Management(IAM)

It is an AWS service that helps you control access to your AWS resources for your users. making it easier for you to track and limit the access of the resources to the right users.

AWS Key Management Service

It is a managed service that helps you create and control encryption keys which is used to encrypt your data, and uses Hardware Security Modules to protect the security of your keys.



AWS Cognito

AWS Cognito lets you add user sign-up, sign-in, and access control to your web and mobile apps quickly and conveniently. Amazon Cognito scales to millions of users and supports sign-in with social identity providers.

AWS CloudTrail

AWS CloudTrail is a service that enables governance, compliance, operational auditing, and risk auditing of your AWS account. With CloudTrail, you can log, continuously monitor, and retain account activity related to actions across your AWS infrastructure.

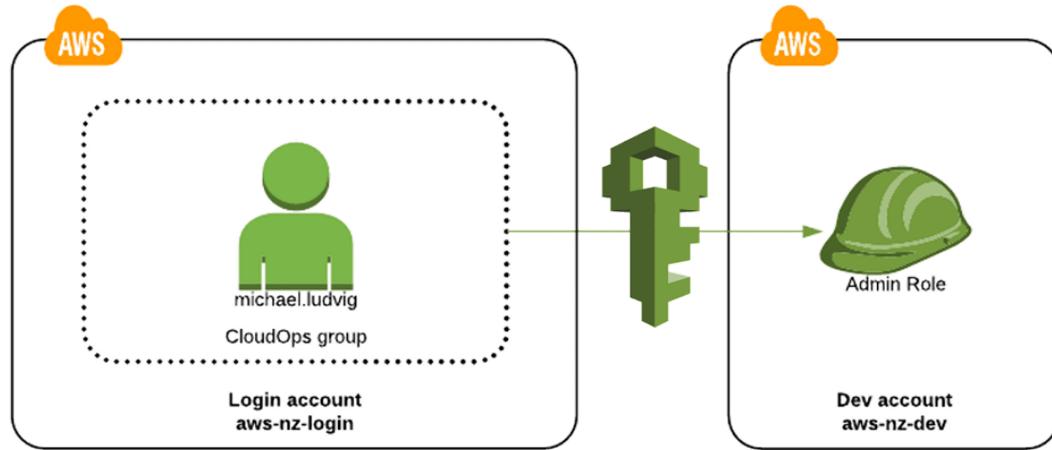


Let's take a closer look at a few of the major Security Services in AWS.

5.1 AWS IAM Service

Organizations must have control over who has permission to access their AWS resources, which resources are available, and the actions authorized users can perform. The purpose of AWS IAM is to help IT administrators manage AWS user identities and their varying levels of access to AWS resources.

AWS Identity and Access Management (IAM) is a web service that helps you securely control access to AWS resources.



5.1.1 Working of AWS IAM Service

When you first create an AWS account, you need a single sign-in identity to access all AWS services. This identity is called the AWS account root user. You can access it by signing in with the email ID and password that you used to create the account. AWS IAM helps in performing the following tasks:

- It is used to set users, permissions and roles. It allows you to grant access to the different parts of the AWS platform
- Also, it enables Amazon Web Services customers to manage users and user permissions in AWS
- With IAM, Organizations can centrally manage users, security credentials such as access keys, and permissions

IAM enables the organization to create multiple users, each with its own security credentials, controlled and billed to a single AWS account. IAM allows the user to do only what they need to do as a part of the user's job.

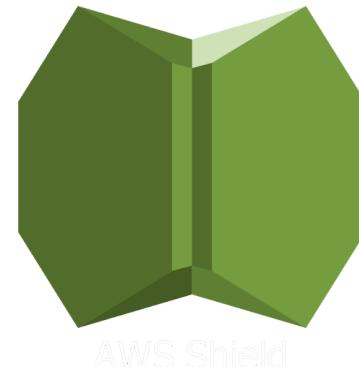
5.2 AWS Shield

AWS Shield is a managed Distributed Denial of Service (DDoS) protection service that safeguards applications that run on AWS. It provides mitigations that are always-on detection and automatically inline in nature, this minimizes application downtime and latency, so you do not need to engage AWS Support to benefit from DDoS protection.

Let's quickly look at what DDoS is?

DDoS is basically overloading your website with irrelevant traffic with the intention of taking your website down. How does it work? Hackers create a bot-net by infecting numerous computers connected to the internet. Wondering how? Remember those weird emails that you get sometimes on your mail? Lottery, medical aid, etc. Basically, they make you click on something, which installs malware on your computer, which is then triggered to make your computer, a plus one, in the irrelevant traffic.

Insecure about your web application? Don't be, AWS Shield is here.



AWS Shield

5.2.1 AWS Shield Types

01

Standard Service



The Standard package is **free** for all the users, and your web application on AWS is automatically covered with this package by default. It includes the following features:



Quick Detection



Inline Mitigation Attacks



Add Custom Rules to support your application

02

Advanced Service



The Advanced package, will let you cover your Elastic Load Balancers, Route 53, & CloudFront resources, with a little extra cost. What all is included? Let's have a look:



Enhanced Detection



Visibility and Attack Notification

Advanced Attack Mitigation



Specialized Support



DDoS Cost Protection

Chapter 6

FREQUENTLY ASKED INTERVIEW QUESTIONS

The ascendance of Cloud Computing has taken the technological world by storm. AWS is one of the leading service vendors in the cloud market and many people want to cash in on a possible opportunity in the domain. This chapter covers the questions which will help you in your AWS Interviews and open up various career opportunities available for an **AWS Professional**.

1. How is stopping and terminating an instance different from each other?
2. When will you incur costs with an Elastic IP address (EIP)?
3. How is a Spot instance different from an On-Demand instance?
4. Are the Reserved Instances available for Multi-AZ Deployments?
5. How to use the processor state control feature available on the c4.8xlarge instance?
6. Which network performance parameters can you expect when you launch instances in a cluster placement group?
7. To deploy a 4 node cluster of Hadoop in AWS which instance type can be used?
8. Where do you think an AMI fits, when you are designing an architecture for a solution?
9. How do you choose an Availability Zone?
10. Is one Elastic IP address enough for every instance that is running?



11. What happens if my application stops responding to requests in Beanstalk?
12. Can S3 be used with EC2 instances? If yes, how?
13. How can you speed up data transfer in Snowball?
14. Is it possible to change the private IP addresses of an EC2 while it is running/stopped in a VPC?
15. Why do you make subnets?
16. If my AWS Direct Connect fails, will I lose my connectivity?
17. If I launch a standby RDS instance, will it be in the same Availability Zone as my primary?
18. Can I retrieve only a specific element of the data, if I have nested JSON data in DynamoDB?
19. How is AWS OpsWorks different than AWS CloudFormation?
20. What are lifecycle hooks used for in AutoScaling?
21. What happens if CloudTrail is turned on for my account but my Amazon S3 bucket is not configured with the correct policy?

100+ AWS INTERVIEW QUESTIONS & ANSWERS

Chapter 7

CAREER GUIDANCE

WHO IS AN AWS CLOUD PROFESSIONAL?

An AWS Cloud Professional is responsible for performing technological responsibilities concerning AWS Cloud, which span from maintenance and support, management, planning and design of an Infrastructure. These professionals can be classified into the following:

AWS Certified Cloud Developer

AWS Developers are responsible for Developing Cloud Solutions. Following are some of their responsibilities:

- Expertise in at least one high-level programming language
- Skills for developing, deploying & debugging cloud applications
- Skills in API usage, CLI and SDKs for writing applications
- Understanding of application lifecycle management
- Ability to use CI/CD pipelines to deploy applications
- Skills in writing, correcting and debugging code modules
- Coding skills for serverless applications
- Understanding of the use of containers in development processes



AWS Certified Solutions Architect

AWS Architects are responsible for Designing Cloud Solutions. Following are some of their responsibilities:

- Designing and deploying dynamically scalable, available, fault-tolerant, and reliable applications on the Cloud
- Selecting appropriate Cloud services to design and deploy an application based on given requirements
- Migrating complex, multi-tier applications on Cloud Platforms
- Designing and deploying enterprise-wide scalable operations on Cloud Platforms
- Implementing cost-control strategies

AWS Certified SysOps Administrator

AWS Administrators are responsible for maintaining Cloud Solutions. Following are some of their responsibilities:

- Relevant experience as a Systems Administrator
- Ability to work with virtualization technology
- Experience in monitoring and auditing systems
- Knowledge of networking concepts
- Understand the flow of data, to and from a service provider
- Ability to estimate usage costs and identify cost control mechanisms
- Capability to migrate the on-premises workload to service providers

There are specialty certifications that AWS offers, in case you are looking for specialization

**NEED EXPERT
GUIDANCE?**

Talk to our experts and explore
the right career opportunities!

08035068110
+1415 682 6002



7.2 How to Prepare for an AWS Cloud Role?

To be an AWS Cloud Professional, you will be required to develop a proper cloud skill set. Here are some important steps to help you out:

Understand Computing Fundamentals

Before you start with Cloud Computing, the following are some of the fundamentals you would be required to consider:

- **Networking** - Routing, IP addresses, networking layers, networking protocols, etc.
- **Computer Security** - Basics of access policies, encryption, data security, etc.
- **Computer Architecture** - Learn system design principles and their fundamentals
- **Coding** - Learn PL/SQL and Linux fundamentals



AWS Fundamentals

It is important you get into details of how the AWS Platform works. Start by:

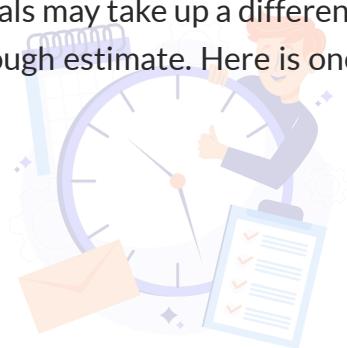
- Understanding AWS Services and Platform as a whole
- Pick a role and start preparing in that direction
- Create a free tier account and start exploring the services offered
- Focus on core domains and refer to relevant AWS documentation for practical implementation
- Service domains to majorly focus on are Compute, Storage, Database, Network, Monitoring, Application Migration, etc.



Preparation Time

There is no definite timeline for the learning process. Different individuals may take up a different time to reach their respective goals. However, we can always have a rough estimate. Here is one for you:

- Basics (2 weeks/20 hours)
- Computing Fundamentals (4 weeks/40 hours)
- Service Providers with Practical implementation (4 Weeks/40 hours)
- Projects (2 weeks/20 hours)
- Certification Preparation tentatively (4 weeks/40 hours)



edureka!

AWS Training Programs

AWS ARCHITECT CERTIFICATION TRAINING



Weekend/Weekday



Live Class



24 x 7 Technical Assistance

www.edureka.co/aws-certification-training

AWS CERTIFIED DEVOPS ENGINEER TRAINING



Weekend



Live Class



24 x 7 Technical Assistance

www.edureka.co/aws-certified-devops-training

CLOUD ARCHITECT MASTERS PROGRAM



Weekend/Weekday



Live Class/Self-Paced



24 x 7 Technical Assistance

www.edureka.co/masters-program/cloud-architect-training

MIGRATING APPLICATIONS TO AWS TRAINING



Weekend



Live Class



24 x 7 Technical Assistance

www.edureka.co/migrating-to-aws



LEARNER'S REVIEWS

S Bhoopathy



Edureka aptly named, gives the students a 'Eureka' Moment during the course. Learning is a world to explore and Edureka provides us with the navigation maps. I never for a minute felt that I am doing AWS course online away from the faculty and the staff.

S Mitra



Edureka **redefines the way online training** is conducted by making it as futuristic as possible, with utmost care and minute detailing, packaged into the **a unique virtual classrooms**. Thank you Edureka!

Harshik



It was a great experience with Edureka. Especially the **staff is very helpful** to helping you out from the problem or issue that you are facing in your **AWS project**. Awesome service. Also I like the system like if you send a query email, it is auto converted into a ticket.

Free Resources



3000+
Video Tutorials on
YouTube



Active
Community

e!

**2500+ Technical
Blogs**



30+
**Free Monthly
Webinars**

edureka!

About Us

There are countless online education marketplaces on the internet. And there's us. We are not the biggest. We are not the cheapest. But we are the fastest growing. We have the highest course completion rate in the industry. We aim to become the largest online learning ecosystem for continuing education, in partnership with corporates and academia. To achieve that we remain ridiculously committed to our students. Be it constant reminders, relentless masters or 24 x 7 online technical support - we will absolutely make sure that you run out of excuses to not complete the course.

Contact Us

IndiQube ETA, 3rd Floor,
No.38/4,
Adjacent to Dell EMC2,
Dodanekundi,
Outer Ring Road, Bengaluru,
Karnataka - 560048

- 📞 IN: 08035068108 | US: +1415 993 4602
- 📷 www.instagram.com/edureka.co/
- 📍 www.facebook.com/edurekaIN
- 🔗 www.linkedin.com/company/edureka/
- ▶ www.youtube.com/user/edurekaIN
- ↗ t.me/s/edurekaupdates
- 🐦 twitter.com/edurekaIN
- Pinterest in.pinterest.com/edurekaco/

News & Media



Edureka partners with NIT Warangal to upskill IT professionals in AI and Machine Learning



Edureka (Brain4ce Education Solutions) tops Deloitte Tech Fast 50 2014 rankings