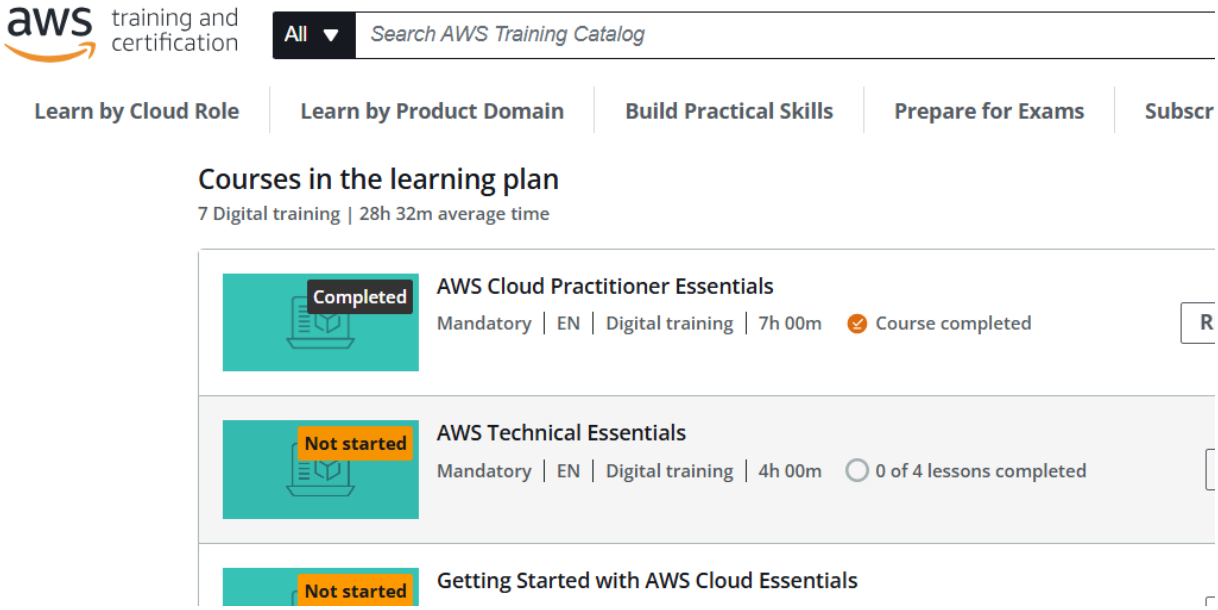
AWS Skill Builder: [AWS Cloud Practitioner]



Additional Resources:

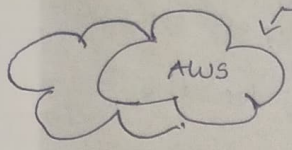
1. AWS Cloud Practitioner Practice questions: Part 1
2. AWS Cloud Practitioner Practice questions: Part 2
3. AWS Cloud Practitioner Practice questions: Part 3

: Total 150 practice questions

4. Geeks for Geeks

AWS Cloud Practitioner.

Module 1



← AWS Cloud.

⇒ This will help you to access the servers of aws cloud and deploy your content in it, you need to pay as long as you use it. This term is known as "Cloud Computing"

Amazon EC2 – Type of virtual server.

Cloud Computing : on-demand delivery indicates that pay-as-you go pricing for your resources over the Internet.

⇒ No need to tell in advance, if you want them just use it by paying money (Ex:- 300 virtual servers (or) 2000TB of storage etc...)

⇒. Deployment Models for Cloud Computing.

- Cloud-Based
- On-premises
- Hybrid Deployment

- Runs all parts of application in the Cloud.
- Migrate existing applications to the Cloud
- Design and build new applications in the Cloud.

On-premises deployment is also known as "Private Cloud-deployment", In this model the resources are deployed on premises by using Virtualization and resource managment tools.

In Hybrid deployment, the Cloud-based resources are Connected to on-premises infrastructure.

⇒ Cloud Computing makes you to focus more on your application rather than building server and tension about the Storage and all. Just you provide good application using AWS resources.

Module 2

Amazon EC2:- Amazon Elastic Compute Cloud.

Variety of skill set people are needed in a Restaurant to run the bussiness. Same applies for amazon. EC2 instances of diff memory, storage and networking capacity, and will let the client to select based on their application.

Types of EC2

① General purpose — Mixed of all aspects like memory, storage and networking resources, they are roughly equal in this area.

②. Compute optimized — applicable for high performance web servers. These are used for workloads.

③. Memory optimized — These are designed to give high performance to the work loads. Enables you to run workloads with high memory needs and receive great performance.

④ Accelerated Computing — for graphics apps, game streaming and application running.

⑤ Storage optimized — Designed for workloads that require high, sequential read and write access to large datasets on local storage

IOps — Input/output operations per second. This is a metric to calculate the performance of a system. This measures how many input/output operations a device can perform in one second.

Amazon EC2 Pricing:- Purchase options.

① On-Demand — Means you will pay until the instance runs. Can be per hour (or) per second.

and no long term Commitments.

② Savings Plan:- This is a Commitment plan for a Certain amount of usage, flexible pricing model. Savings upto 72%

③ Reserved Instances:- upto 75% Discount, u need to Commit for 1 (or) 3 year term and pay in any 3 diff Payment options.

- all upfront – Pay entire when you Commit
- partial upfront – Pay partial when you Commit.
- no upfront – Don't pay anything when you Commit.

④ Spot Instance:- Unused Amazon EC2 Computing Capacity, offer you upto 90% off on-Demand prices. You want to start and Stop the instance at a Certain time and when you Claim for AWS, it will provide unused Servers. That is spot instances, and this will warn you 2 mins before it stops. (For fixed-time)

⇒ Interruption of work is more in Spot instance.

⑤ Dedicated Hosts:- These are physical hosts for the EC2 i.e., fully dedicated to your use. Dedicated hosts are more expensive.

Note:- 1) Reserved instances asks you to specify instance family and size, platform description, tenancy and Region.

2) Savings Plan – 1 (or) 3 year term.

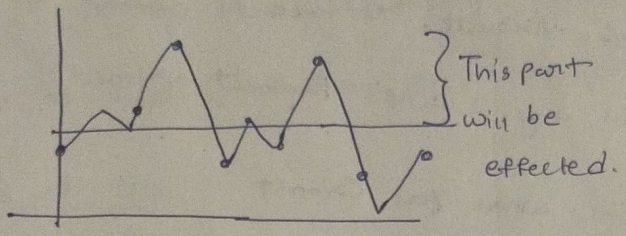
3) On-Demand – Pay as you go.

Scaling Amazon EC2:- Deals and tells about how it can be expanded based on your application and business.

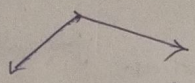
Ex:- Take a scenario of same Restaurant analogy. the Customers may be less in weekdays but more in weekends, so there will be a Change in the resource usage.

If you take for an avg use case, then it will effect the weekend needs.

or If you take upto maximum resource that too will effect the resource usage when it is not used..



The same will be applicable for the Aws and so to resolve this we use "Amazon EC2 Auto scaling". This enables you to add (or) remove EC2 instances in response to the demand.



Dynamic Scaling ⇒ Changes (or) scales in and out based on demand

Predictive Scaling ⇒ Scales the right no. of Amazon EC2 instances based on predictive demand.

To scale faster use above two together.

So, to maintain that productivity, you must scale up (or) Scale out.

So Aws Scaling works according to the Rush.

Ex: Initial stage ⇒ 5 Customers ⇒ 5 servers.

Rush ⇒ 10 Customers → 5, 5 (extra servers).

No Rush ⇒ 5 Customers → 5, 5 (x)

⇓

These 5 are terminated again.

and will be used again at the time of Rush.

Direct traffic with Elastic load balancing:-

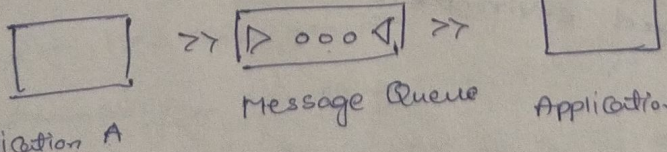
Ex:- When there 3 counters in a coffee shop and customers are continuously going in a single counter, so remaining 2 will sit idle as there is no work, This creates a traffic. Same applies for Aws. When there are multiple EC2 instances all working for the same purpose, and a request comes in then there will be a confusion that to which EC2 instance it should approach for. So we use load balancing - This is an application that takes the request and routes them to be processed.

Elastic load balancing :- ELB is a service that automatically distributes incoming application traffic across multiple targets. It can automatically scale its request handling capacity in response to incoming demand.

Messaging and Queuing → Tightly Coupled Architecture
Messaging and Queuing → Loosely Coupled Architecture.

⇒ In tightly-coupled, it will run good until there is a sync b/w two applications, If there is a delay then it may experience some errors that disturbs both sides of applications.

⇒ Not the same for loosely-coupled,



App A will send one request → Queue → It will remain in the Queue until B will take it and processes it. Until then messages will be in the Queue, so there will be no traffic at application B.

Two Services

- Amazon Simple Queue Service (SQS)
- Amazon Simple Notification Service (SNS)

SQS

Store messages,
Receive,
Send b/w software components
at any volume

Data contained within a message is Payload.

SNS

along with sending messages, it can send Notifications to the end users.

Used to fan-out Notifications.

This is a Publish/Subscribe Service.

EC2 is
- Flexible
- Reliable
- Scalable.

Aws Serverless: Serverless means you cannot actually see or access the underlying infrastructure. Or instances that are hosting your application..

Ex: Aws lambda. (a type of serverless computing).

⇒ Just upload your code into Aws Lambda, and the lambda function. Configure a trigger and from there the service waits for a trigger. When a trigger is detected, the code is automatically run in a managed environment.

Container Services:

1. Amazon Elastic Container Service (Amazon ECS).
2. Amazon Elastic Kubernetes Service (Amazon EKS).

Aws Fargate is a Serverless System to run both ECS and EKS.

⇒ Platform.

Case ①

Host traditional applications.

full access to the OS

⇒ Use Amazon EC2.

Case ②

Short Short running functions.

Service-oriented applications & Event-driven.

⇒ Use Aws Lambda.

Case ③

To Run Docker-Container based

Choose Ecs (or) EKS.

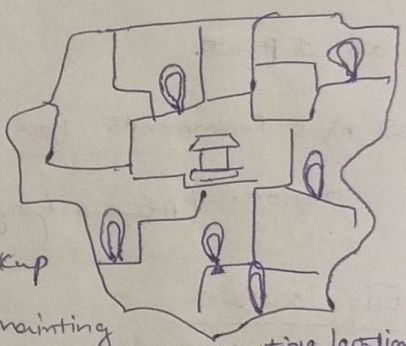
⇒ Choose platform, either you'll manage (or) you depend on Fargate

Note:

Container orchestration services helps you to deploy, manage and Scale your Containerized applications.

Module-3.

- Describes the availability of the Aws, If user doesn't access one branch they can go to another branch.



Aws Regions:- Aws is far away from our thoughts, wt would happen if any disaster strikes our data center, Just keeping a backup data is not a good business, So Aws is maintting multiple locations

Some "Regions"

Aws have multiple data centers at the high traffic areas, and each data is connected to every other center through high speed fiber network which is controlled by the AWS.

4 Factors. when Choosing a Region.

① Compliance — Choose Region and your Reaquirements.

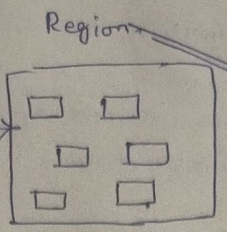
② Proximity — How close you are to your Customers.

③ Feature Availiability — Launching neue products and services.

④ Pricing. — Tax Structure is not same in every region, so Choose your region accordingly.

⇒ Aws Bracket — Aws quantum Computing Platform.

Availability Zones: A single data center (or) a Grp of data Centers within a Region.



Aws have multiple Data Centers around the world.

They are geographically isolated areas.

Group of Data Centers is called a Region.

These availability zones are not build nearby, they are far from point-to-point. Don't run your app in just one data center, any disaster can spoil it, keep your backup data in diff data centers. So it is timely available even when data is lost at 1 point.

⇒ Aws Recommends you to run at atleast 2 Centers within a region. (AZ — A fully isolated portion of Aws global infrastructure)

Edge locations.

Amazon cloud Front is a service that delivers data with higher speed and low latency, They use this Concept called Edge locations. (Stores Cache copy of data for Fast delivery).

Edge locations also run "Domain name service" (DNS), i.e, "Amazon Route 53" helping the Customers to route Correct web applications.

Aws outposts: Running the service in your own building.

⇒ In Aws, everything is an API call, we can interact with each other using API (Application programming Interface).

① Aws Management Console → Test environments.
→ View Aws bills.
→ View Monitoring.
→ Work with Non-technical resources.

→ when you are dealing Manually like creating an EC2 instance, the whole work is manual so there is a chance of errors, So use the tools that allows you to Script (or) program the API Calls.

① Aws Command line Interface: write your script and run the terminal, (or) you want to Create another just re-run the same script. This is less susceptible to human error.

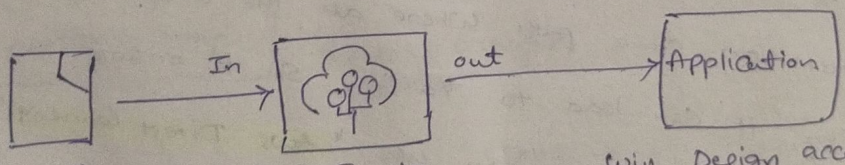
② Aws Software Development kit (SDKs): allows multiple programming languages to run (C++, Java, .NET etc.) (</>)

3 ways to interact:

- Aws Management Console.
- Aws Command line interface.
- Aws software Development kit.

Elastic Beanstalk:

Instead of all these things like clicking on the Consoles, Creating instances, writting Commands, managing the load balancers, you Can run your application using "Aws ElasticBeanstalk".



Application Code. → Aws Elastic Beanstalk. → Will Design according to your Specifications.

and easy to save the Configurations.

Aws CloudFormation: This is an infrastructure as a Code tool, that allows you to insert some documents on what to build exactly Not "How to build". (formats like YAML (or) JSon text-based format).

It also supports. Storage, Database, analytics and Machine learning apart from EC2 instance.

It can run the same application in diff accounts and in diff regions i.e, less prone to human error.

Module 4 – Networking.

Amazon Virtual private cloud :- where we can launch Virtual networks that we define

- Public Subnet ⇓ we can use directly.
- Private Subnet. ↳ we cannot access directly.

⇒ VPC is your own private network in AWS. That allows you to define your private Ip range [Subnet is a section of VPC],

Internet Gateway – This is like a doorway that is open to the public.

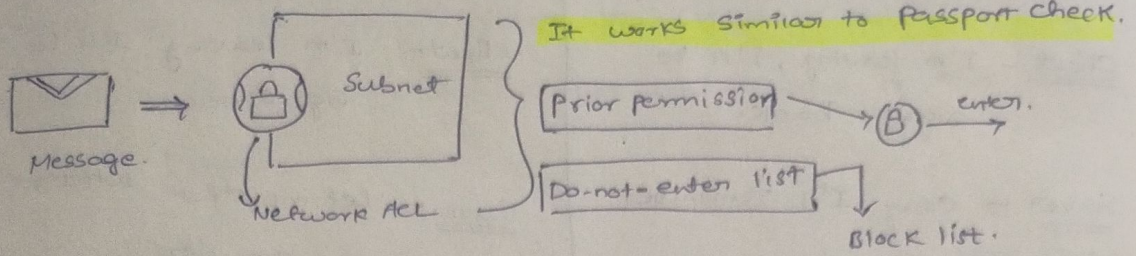
Virtual private Gateway – This will not allow any public traffic only. people coming from a approved network.

⇒ The problem is that even if we use VPN, it will use the same bandwidth for same path where all the other users are also using, it can lead to traffic, So to ensure low latency and high security we will use "AWS Direct Connect" Allows a Dedicated path blw Source and Destination.

Subnets and network access Control lists :-

So, Here we have a Message in the form of packets, and before it enters into the Subnet, it will undergo some cross Check called Network access Control list (ACL) to check whether the

message have prior permission to enter or leave the subnet.



⇒ By default when an instance is created, it actually comes up with Security group, which will not allow to enter any outside traffic, but it is not useful at all the time, sometimes we want the messages to get in, so it shd be in HTTP format, so that it can allow.

Security Group

⇒ Security Grp will keep some memory on whom to allow and whom to not.

⇒ Stateful

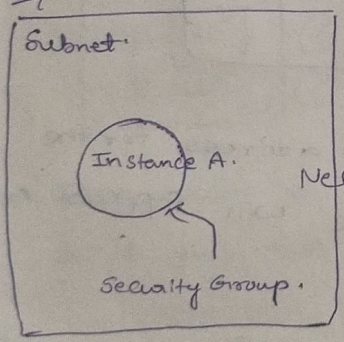
⇒ Inbound / outbound

Network ACL.

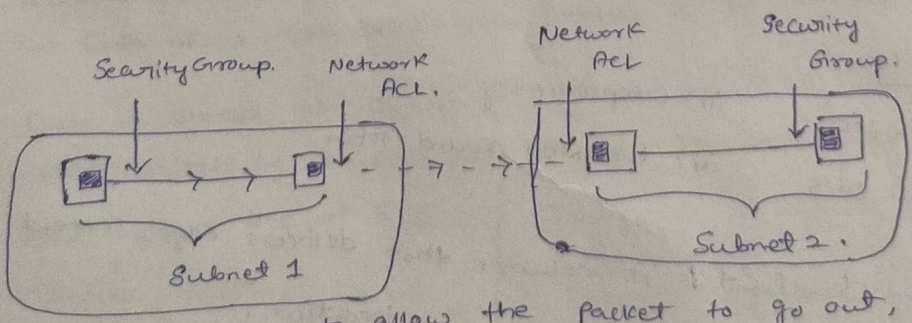
⇒ Network ACL does not remember anything, it will check every single packet before sending in.

⇒ Stateless.

⇒ This is a virtual firewall



⇒ Every subnet will contain a Network ACL to verify the incoming traffic and every instance will have a Security Group.



First Security Grp needs to allow the packet to go out, then it is again checked by NACL to enter into another subnet, then Same process will take place at the another end, Both the ACL will have their own checklist for allowing into the region.

Security Group:

Client - I'm leaving, I'll be right back.

Server - Okay, I'll remember you, I'll see you later.

Client - I'm back again.

Server - I remember you, you can go.

Network ACL

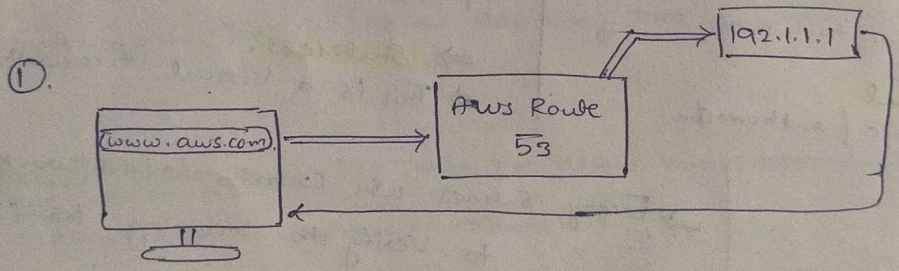
Client - I'm leaving, I'll be right back.

Server - Let me check whether you are on the list.

Client - I'm back again

Server - Let me check whether you are on the list.

Global Networking: Till now the concept went on how you can interact with Aws infrastructure, But how can your customers interact with your website. This happens with the help of "Amazon Route 53" (DNS).



Route 53 will search for the corresponding Ip address for the Input DNS and after entering the website will appear on the screen.

Routing policies:

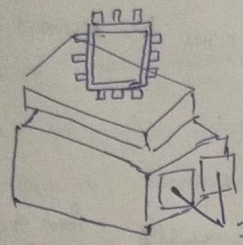
i) Latency-based
ii) Geolocation DNS
iii) Geoproximity
iv) weighted round robin

(2) Amazon CloudFront: A network that delivers edge content to users based on their geographic location.

Domain Name Service (DNS): Translating Domain name to an Ip address.

Module 5 :- Databases and Storage.

Depending on which type of instance you created, there will be a creation of Instance Store Volumes that are connected to Aws Host on top of instances are running.



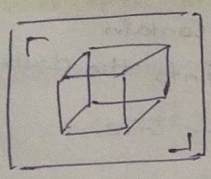
⇒ It will appear like this, so since the Store Volumes are attached to the Aws Host, If we delete EC2 instance, the data stored in the Volume will also gets deleted// (if we stop (or) terminate),

It will appear on another Aws host where these volumes are not attached.

⇒ We don't want our data to deleted everytime, So Aws provide one service called Amazon Elastic Block Store (Amazon EBS). (Block-level storage).

These EBS volumes are virtual harddrives that can persist the start and stop of the EC2 instance.

⇒ It comes in different types and sizes.



- ✓ Type
- ✓ Size
- ✓ Configurations

If you stop and start your EC2 instance, then your data remains the same.

⇒ EBS allows you to take Incremental backup called Snapshots. So if your data is corrupted, you'll not loose your data.

Amazon Simple Storage Service:-

The Data of a certain company needs to be stored somewhere.

⇒ Data is stored as objects
⇒ Store objects in buckets.
⇒ Max upload size of 5TB.
⇒ Version objects.
⇒ Create multiple buckets.

Amazon S3:- Object-level storage.

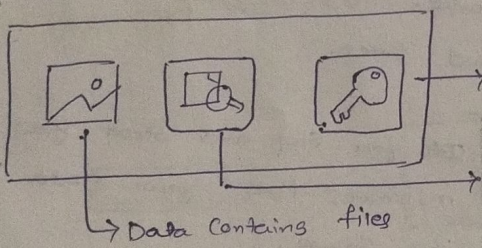
This is a storage class 99.999999999 % of durability

Durability:- Lasting a long time without breaking (or) becoming damaged//

- Amazon S3 Static website hosting. (Collection of HTML files).
- Amazon S3 Standard - Infreauent access : used when data is less reauired but rapid access when needed. Perfect place for baekup's
- Amazon S3 Glacier Flexible Retrieval — Data will be stored for years and do not reauire rapid access.

Imagine if we want to shift our data continuously for 90days at 1 one point, then 30 days in another, then 30 days in another block, with the help of Amazon S3 lifecycle management it will do automatically for you.

Object Storage is a collection of data, metadata and a key.



Key is a uniaue identifier here

Meta data will contain which type of info the data Contains and its size.

Data Contains files like image, video and audio etc.

{ Amazon EBS ⇒ Block-level storage.
Amazon S3 ⇒ Object-level storage. }

S3 Standard

1) For freauently accessed data.
2) Store data in three availiability zones.
3) High cost than other Storage classes.

S3 - IA (Infreauent)

1) For Infreauentely accessed Data.
2) Lower storage price
3) Reauires high availiability when needed.
4) available in three zones.

S3 One Zone - IA

1) Stores data in Single availability zone.
2) Lower than S3-IA.

S3 Intelligent-Tiering.

1) Ideal for data with unknown or Changing access pattern
2) Requires monthly monitoring and automation fee per object..

S3 Glacier Instant Retrieval.

1) Works well for archieved data that requires immediate access.
2) Can Retrieve data in few milliseconds.

S3 Glacier Flexible Retrieval.

1) Low cost storage designed for data archiving.
2) Retrieves data within minutes to hours//

S3 Glacier Deep archive.

1) Lowest-Cost object Storage Class ideal for archiving.
2) Able to retrive data within 12hrs.

for archival:

1. Amazon S3 Glacier Flexible Retrieval
2. Amazon S3 Glacier Deep archiere.

Amazon EBS.

1) Size is upto 16TiB (Tebibytes)
2) Survive termination of their EC2 instance.
3) Solid State by default
4) HDD options.

Amazon S3.

1) Unlimited Storage.
2) Individual objects upto 5TBs
3) Write once/Read many.
4) 99.999999999% durability.

Amazon Elastic File System: (Aws EFS):

Multiple instances Can access the data in EFS at the same time.

⇒ Multiple instances reading and writing simultaneously.
⇒ This is a LinuX file system.
⇒ Regional resource — Means any instance from that particular region Can write to the EFS file System. As more you write data into it, it will Scales it.

Note: EBS Stores Data in Single availability Zone and EFS will Store across multiple availibility Zones//

Amazon RDS: (Relational Database System).

Suppose we have one person name in a table and address in another table, we'll use a common attribute to relate them.

AWS Supported Databases: (Built for Business analytics)

- MySQL
- Oracle
- postgreSQL
- Microsoft SQL Server.

Amazon RDS supports Automated patching, Backups, Redundancy, failover and disaster recovery.

Amazon Aurora: To run database workloads on the cloud.

MySQL, PostgreSQL

⇒ Data replication is available (6 copies of data).

⇒ It helps to reduce your database costs by reducing unnecessary input/output operations., while ensuring your data is still available.

Amazon dynamoDB: Serverless Database, This is a non-relational database, you can add and remove items from the table at any time. This is good for application that have variation in item to item.

⇒ So we can't run Complex SQL Queries on dynamoDB.

⇒ This is a key-value database service.

Key points:

» Non-Relational, NoSQL Database

» purpose built — Means not ideal for all type of workloads.

» millisecond response time.

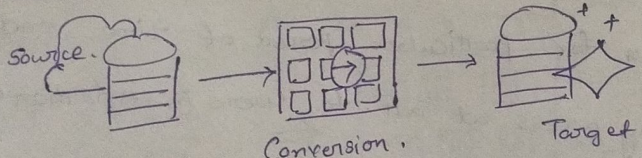
» Fully managed

» Highly Scalable.

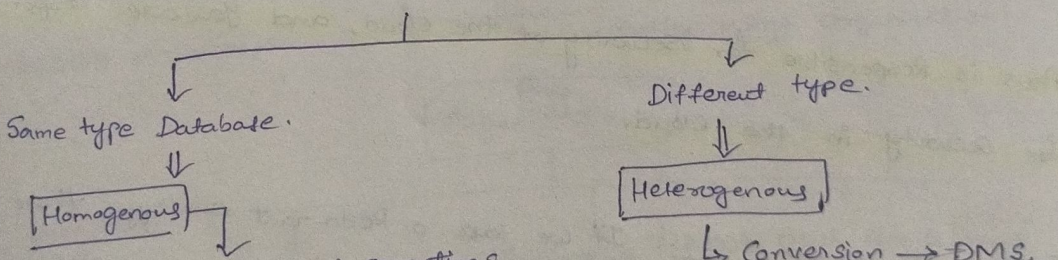
Amazon RedShift: This is a data warehousing service that you can use for big data analytics. It offers the ability to collect data from many sources and helps you to understand relationships and trends across your data.

Aws Database Migration Service (DMS): It helps you to migrate relational, non-relational and other types of data stores., In short existing databases.

⇒ Source and destination need not to be of same datatype,
If not it is Homogenous databases. (same type)
Heterogenous data (Diff type).
So we need to Convert them using "Aws Schema Conversion tool", This will Convert source schema and code to match with target database.

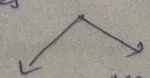


Then use DMS to migrate the data.



Additional:

1) **Amazon DocumentDB:** Used for Content management (Document DB service)
2) **Amazone Neptune:** A Graph Database. (Recomendation engines, fraud detection and knowledge graphs).
3) Amazon Managed Blockchain – For Block Chain networks.
4) Amazon Quantam Ledger Database (QLDB): Immunable record of system.
↳ used to review all changes made to your application (a history).
5) Amazon ElasticCache – provides Caching layers on top of your Databases to help improve read times.



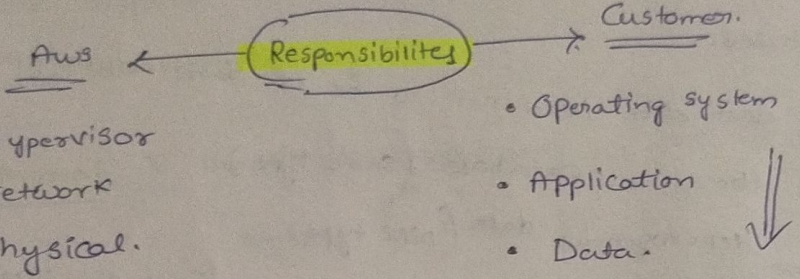
Supports 2 types of Data stores.

Amazon DynamoDB acceleration (DAX):-

This is an in-memory Cache for DynamoDB. helps to improve the response time.

Module 6- Security:- When it comes to Security, both AWS and the Customer are responsible,

So we follow Shared Responsibility Model.



⇒ AWS offers some tools to protect your data like sometimes it can give access to users to see pictures on a retail website, sometimes restricts user for particular period of time and even it won't give any access at all to users in another case.

AWS is Responsible for Security of the Cloud, and you are responsible for security in the Cloud.

User Permissions and Access:- If we take a Restaurant analogy, there are so many workers, working there are and not every person has access to every sector, similarly happens in AWS, when you create an account it will give account root user who has permission to do anything, similar to owner of account.

Multi-Factor Authentication (MFA):- uses a Randomized token along with email and password.

AWS Identity and Access Management (IAM):- Zero permissions at the beginning, then you have to explicitly give permissions.

This Principle is Called least Privilege Principle, means a user is granted access only to what they need.

IAM Policy is a "JSON" document.

Effect – "Allow" (or) "Deny"

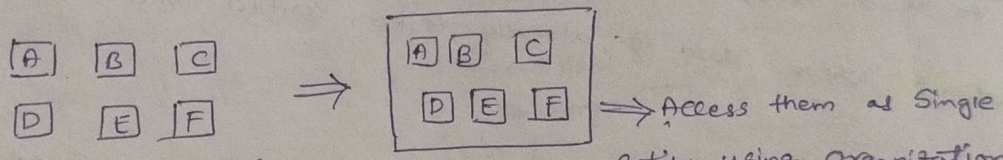
⇒ To allow permissions for a certain group, First make a permission formal and just add all those names to the IAM Group, Simply.

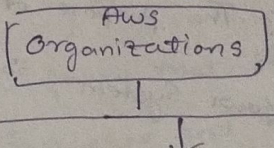
IAM Policies: A document that allows (or) denies permissions to Aws Services and Resources. [IAM Role – Temporary access to the Permissions.]

Aws Organizations: A Central location to manage multiple Aws accounts.

like Billing and pricing. | Wrong permission issues. | New account access | etc...

All Can be managed using Aws Organizations.





"OU" – Organizational Units

⇒ You Can Centrally Control Permissions for the accounts in your organization by using Service Control Policy (SCPs). This is applicable to Organization root, Individual member account or an OU

Compliance :- Maintaining some Standards and rules.

So you need to collect documents, files and records, and inspect your Aws environment to check if we meet the Compliance regulations.

Ex:- • Food Inspector Checking Restaurant Compliance.
• Dean checking standards of schools.

Aws Artifact :- This is a service that provides on-demand access to Aws security and Compliance reports and select online agreements. It have two sections.

• Aws artifact agreements ⇒ used to sign any agreement with the AWS. (Review, accept and manage agreements with Aws).
• Aws artifact reports ⇒ For additional information, we can advise them to reach here, and info will be provided from 3rd-party applications where data is already tested, verified and Industry Standard.

Denial-of-Service attack :- The purpose of this attack to shutdown the functionality of your system, so that it can be no longer operate.

Ex:- 1) HTTP level attacks.
2) UDP Flood. — Flooding a lot of data to your PC.
3) Slowloris attack. — Slow internet connection.

↳ Solution :- Elastic load balancer.

Solution :- Security Grps.

Aws WAF — web application firewall.

Aim of this attack to make a website unavailable to the users.

Multiple hackers attacking at a time is known as Distributed denial-of-service attack.

Solution for DDos is to use "Aws Shield"

Standard — Protects at no-cost Service. Used Standard analysis and techniques..

Advanced. — This is a paid-Service. Can integrate with other Services too.

Additional Security services: (Creating Cryptographic Keys).

- Encryption — Securing a message (or) data in a way that only authorized parties can access it.
  Here Aws Key Management Service (Aws KMS) is used
  → Encryption at rest
  → Encryption at transit
- Amazon Inspector: It helps to improve Security and Compliance of applications by running automated security assessments.
- Aws WAF: Web application firewall that lets you monitor network requests that comes into your applications.

Checks Ip address ⟹ if(blocked list) { no entry; } else { enter; }. → network.

- Amazon GuardDuty: This is a service that provides intelligent threat detection for your Aws infrastructure and resources.

Module-7: Monitoring and analytics.

To know about the business (or) how the process is running Smoothly. i.e, known as Monitoring: observing systems, collecting metrics and then using data to make decisions.

⇒ Amazon cloudwatch: Allows you to monitor your Infrastructure and the applications you run on AWS in real-time.

Amazon cloudwatch alarm: You'll set a threshold (or) a limit for a metric, and when it is reached it will make an alarm to monitor it quickly.

we can alarm on custom metric

Benefits

→ Access of all your metrics from a Central location.

→ Gain visibility into your applications, infrastructure and services.

→ Reduce MTTR and improve TCO.

→ Drive insights to optimize applications.

Amazon CloudTrail: The Comprehensive auditing tool.

Assume in a big company, there could be so many changes made by both software (or) hardware, and problem is not every change is being recorded. But Here in AWS everything is programmatic. So CloudTrail engine records exactly the request of changes. (Stores everything).

→ Who made
→ At what time.
→ It is accepted / Denied
→ at which area Changed.

⇒ Events are updated in CloudTrail within 15mins after an API Call.

CloudTrail Insights → This optional feature allows you to automatically detect unusual API activities in your AWS account.

With AWS CloudTrail we can do these 2 below things.

→ Track user activities and API requests throughout your AWS infrastructure

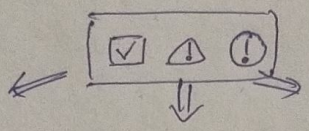
→ Filter logs to assist with operational analysis and trouble shooting.

Aws Trusted Advisor: For real time Recommendations//

Aws automated advisor that advises by analysing your resources based on 5 pillars.

1) Cost optimization
2) Performance
3) Security
4) Fault tolerance
5) Service limits.

} we can find them in Aws Console directly.



Checks passed.

Warnings/ investigations.

Action recommended.

In Summary:

1) CloudWatch — Real time understanding on how your system is behavoring.

2) CloudTrail — Who did what, when and the results

3) Trusted Advisor — For recommendations based on your System performance.

Module 8 - Pricing and Support

Aws Free tier: Depending on the resources you use, Aws provides free tier in 3 ways.

1. Always free — Free to all the Customers, and doesn't expire
2. 12 months free.
3. Trials — Short-term free trial that expires after certain time.

Ex: 1) Aws Lambda - Allows 1 million free invocations per month.
2) Amazon S3 is free for 12 months upto 5GB Storage.
3) Aws LightSail offers 1 month trial of upto 750 hrs of usage.

3 Categories:

⇒ Pay for what you use.
⇒ Pay less when you reserve
⇒ Pay less with Volume-based discounts when you use more.

"Aws Pricing Calculator" lets you explore Aws Services and estimate for the cost of your use cases on Aws.

Suppose, you want to use an EC2 instance, but you don't know how it costs in different regions, and their plans, So we will use Aws Pricing Calculator to estimate the cost in different areas.

⇒ use Aws billing and Cost Management dashboard to pay your Aws bill, monitor your usage and analyze and control your costs.

As we previously learned we can manage multiple Aws accounts using Aws Organizations, so if we want to pay the bill, we can need not to pay individually, we can do that at a

time using "Consolidated billing", so we'll not have 100 bills for 100 accounts.

⇒ Simplified billing process

⇒ Share savings across accounts

⇒ Free feature

Max. no. of accounts allowed for organization is 4, But you can increase that by Contacting AWS.

Another benefits are ability to share bulk discount pricing, Savings plan, reserved instances across the acc in your organizations.

Aws Budgets:- It will set a budget for variety of sources like Cost and usage. So you will receive an alert after you exceed.

Information is updated 3 times a day in your Aws accounts.

Aws cost explorer:- This is a Console-based service that allows you to visualize, how you are spending money with Aws. That shows, on which service you are spending the most and your 12 months historical data.

Support plans:-

1) Basic Support ⟹
   1) 24/7 Customer Service
   2) Documentation
   3) White papers
   4) Support forums
   5) Aws trusted Advisor
   6) Aws personal health dashboard

These are free for everyone.

② Developer Support → 1) Basic Support
2) Email access to Customer Support.

This is good for a business and experimenting

③ Aws Business Support → 1) Basic and developer Support.
2) Trusted Advisor provides full set of best practice checks.
3) Direct phone access to Cloud Support engineers. (4hr response time for production impaired & 1hr response for down).
4) Infrastructure event management

④ Aws Enterprise on-Ramp Support → 1) Basic, Developer and business Support
2) 30 min response time for business critical workloads.
3) Access to a pool of Technical account managers (TAMs)

⑤ Aws Enterprise Support → 1) Basic, developer and business Support
2) 15 min response time for business workloads.
3) Designated "Technical account Manager" (TAM)

Job of a TAM: They provide infrastructure, event management and well-architected reviews and operations reviews.

Six Pillars of well-Architected Framework:

1) Operational Excellence
2) Security
3) Reliability.
4) Performance Efficiency.
5) Cost optimization
6) Sustainability.

Note:- Trusted advisors are only available for Business, Enterprise on-ramp and Enterprise support, of which it is low cost in business support.

Aws Market place- This feature is like a place to check the review before buying a product.

Market place is a digital catalog that includes thousands of software listings from independent software vendors, so for each listing, you can access detailed information on pricing options, available support and reviews from other customers.

Categories:-

1) Infrastructure software
2) DevOps
3) Data products
4) Professional services.
5) Business Applications
6) Machine Learning
7) Industries
8) IoT.

This service is also used to find third-party software that runs on Aws.

Module 9 — Migration and Innovation.

This feature is used to migrate the data in and out of the Aws.

Cloud Adoption Framework:- This exists to provide advice to your company to enable a quick and smooth Migration to Aws. It will guide in 6 areas, called perspectives. Each will address a different responsibility.

Aws CAF action plan:- Helps guide your organization for cloud migration.

6 diff areas:-

1) Business perspective ⇒ To Create a Strong business case for cloud adoption and prioritize cloud adoption initiatives.

2) People perspective ⇒ To evaluate organizational structures and roles, new skill and process requirements and identify gaps.

3) Govt. perspective ⇒ use to update the staff skins and processes necessary to ensure business governance in the cloud.

4) platform ⇒ To understand and Communicate the structure of IT systems and their relationships.

5) Security ⇒ The selection and implementation of security controls that meet organization's needs.

6) Operations ⇒ Define Current operating procedures and identify the process changes and training needed to implement successful cloud adoption.

Migration Strategies:-

Based on priority, cost etc. factor's you'll use Choose one among 6R's Policy.

1) Rehosting — Simple "lift and shift", i.e, moving applications without change.

2) Replatforming — also known as lift-tinker and shift, i.e, lift, makes some Changes to optimize and then shift the data.

3) Refactoring / Rearchitecting :- Involves reimagining how an application is architected and developed by using cloud-native features.

4) Repurchasing :- Involves moving from a traditional license to Software as a service model. (moving to diff Product).

5) Retaining :- It consists of keeping applications that are critical for the business in the source environment.

6) Retiring :- Removing applications that are no longer needed.

AWS Snow Family :- Collection of physical devices that helps to physically transport up to exabytes of data into and out of AWS.

They are :-

1) AWS Snowcone :- 2 CPU's, 4GiB memory & 14TB of storage.

2) AWS Snow-ball
   - Edge storage
   - Edge Compute.

i) Edge-Storage ⇒ For large-scale data migrations.
   Storage - 80TB Hard disk, 1TB of SSD (Solid-state drive).
   Compute - 40 vCPUs and 80 GiB of memory.

ii) Edge-Compute ⇒ used for ML, Video analysis, analytics and local computing stacks.
   Storage - 80TB of HDD, 28TB of SSD.
   Compute - 104 vCPUs, 416 GiB of memory. and an optional NVIDIA Tesla V100 GPU devices

3) Aws Snow-Mobile :- exabyte-scale data transfer service used to move large amount of data to AWS.

You can transfer upto 100petabytes of data per Snowmobile,

⇒ Amazon Polly :- Text to Speech using AI

⇒ Amazon SageMaker :- To Quickly build, train and deploy ML models at scale (or) build custom models, Same can be done with Amazon Augmented AI (Amazon A2I).

Ready to Go AI : "Amazon LEX" (Heart of ALEXA).

Amazon Q-Developer :- This is an ML-powered code generator that provides you with code recommendations.

As you write your code In IDE, Q-Developer will analyze your code and comments and it gives suggestions based on your existing code.

Download with Aws Toolkit Extension. (or) activate directly from Aws Lambda and Aws cloud9 Console code editors.

Module-10 :- Evaluating Architecture.

Evaluates the architecture on the base of

1) Operational Excellence ⇒ Running & Monitoring Systems.
2) Security ⇒ Checks integrity of data
3) Reliability ⇒ How you handle change to meet business.
4) Performance Efficiency ⇒ Maintains decisions.
5) Cost optimization ⇒ Controls where money is Spent
6) Sustainability ⇒ Minimizing environmental impacts.

Exam Details.

Cloud Concepts — 24% ≈ 16ans

Security & Compliance — 30% ≈ 20ans

Technology — 34% ≈ 22ans

Billing & Pricing — 12% ≈ 7ans

100%

{45+ ans needs to be Right atleast}

Total ans = 65

Time = 90min

Passing Score = 700/1000.