[*] Domain (1) Core Concepts

Well archtict Framwork

[1] ملخص ملخص الخاص العام

[1] operational exlance Pillar: كفاءة التشغيل

- focuses on running and monitring sysmts
- always improve it
- key topics, * auto changes
اوتوماتيك
* respoding to events
* define standereds to manage Daily operations

[2] security Pillar:- الأمان

- Focuse on protection of information and systems
- key topics * Confidenality of Data
* integrity of Data
* manging user Permissions
* establish control to decteet security event

[3] Rellability Pillar: المصداقية في وصف الخدمات
، انها تقوم بدورها

- Focuses on Workloads Perfore thier Function or not
- How to Recover From Failur
- key topics:- * Distributed systems design
* Recovery planning
* adapting to changes requirements

[4] Performance EFFiciency Pillar:
كفاءة ال~~[illegible]~~ التطوير المستمر وسهولة الاستخدام

- Focuse on structured and streamlined allocation of IT, computing Resources
- key topis:- * select resource type and size optimized for workloads
* monitor of Performance
* business needs evolve

[5] Cost optimization Pillar: تخفيض التكاليف

- Focus on avoid unnessary costs
- key topics:- * select resource right type and quantity
* scalling to meet business needs without overspending

[6] Sustainability Pillar: المشاركة مع العميل في الإدارة

- Focuse on minimizing the enviromenta impact of Running cloud workloads.
- key topics:- * shared Responsbility models
* understanding impact
* maximize utilizatio to minimize required resource
* reduce Downstream

Domain [2]:- security and compliance service

(A) Aws shiled:- anti DDos, stander is Free

(B) WAF:- anti-sql intection, site scripting
- has roles to manage Accesability

(C) kms (encryption (D) cloud Hsm (encryption Hardwear)

(E) ACM (certificate) (F) secrets manger

(G) Amazon Macie (secure sensitive data)

(H) Amazon inspector (Vulnabilites scanner)

(I) Guard Duty (Malicious Activity)

(J) Aws Config:- Record configurations changes & audit

(M) security Hub:- Dashboard show status on multiple Accounts

(K) Aws Artifact:- Reports of security, complance and agrement, also payments

(N) Amazone Detective:- to know root cause of problems related to security

(P) Aws Cloud Front with WAF:- can be anti DDos

Domain [3] technologis -

→ Cloud Computing services :-

[1] EC2 Instance

[2] load balancers ! Distrbute loads

[3] Auto scaling groups :- to reduce costs
+ remove un Healthy instance

[4] Elastic Beamstalk :- PAAs to Run Your App
+ magic, No infra, its Provision the needed infra

[4] lighstail :- simple web → wordpress
→ for students

[5] Aws lambda :- to Run functions or scripts
- serverless
كالطالب مسئول عن الكود وعملها = فقط

[6] Aws Desktops

[7] Aws Batch :- for schadul jobs & processing
→ Compute service

[8] Contaire instance :- ECs & E-ks (reserved)

[9] container images Repo :- ECR

[10] Fargate :- Server less to Run Containers

~~Note, manages~~

→ storage services :-

[1] S3 :- objects units, versioning, static websites
يعطا أولا

[2] Ebs :- Harddrive on the cloud :- one to one
snapshoots for Duarbility & cost effective, high Performance

[3] EFs :- shared, protocol, Pay for what you use.

[4] Storage getway :- for Hypird

[5] snow Cono

[6] snow Ball

[7] snowMobil

[8] .FSX :- windows based, for lustor (linux

⇒ Compare between S3 typs, snow family sizes, EC2 instance types

هام!

→ Networking

[1] VPC :- isolate you resource, Per region

[2] subnets in VPC :- Private & Public

[3] ACL for Control the subnets

[4] security groups ; on instance

→ Network Service

[1] VPC end Points :- private linke on cloud, No internet

[2] VPC Flowlog :- Capture the traffic From the NIC of instance, Ports

[3] Cloud Front :- CDN, edge location, Cach

[4] global Accelerator :- Use edge locations to improve apps Performence

[5] Rout 53 :- managed DNS :-
- Domain Register, has Policies & Roles / to Control Comming traffic
- forward traffic
- roles anti SQL - injections

→ Database services

[1] relational DB (SQL)

A) RDS
→ structured Data, with Engins
→ Full managed
→ U only mange users & Network & Permission and Data encryption
→ multi AZ Deployment
→ Aws manage Buckup, run in Private VPC

B) Aws Auror (for mySQL & PostgreSQ)

[2] Non - Relational DB : DynamoDB :- serveless
- Key value - auto scal - Microsecond letency
- Commits and Buckup - Flexable schema
- ACID

[3] In memory :- elastic Cach :- for sessions, and media streaming, mysql in memory

[4] graph :- Neptune, for social media, Fraud Detection and recommontion engins

[5] Redshift (Data WorHous) : for analysis using SQL queries, (Repo) for beta - Data
- Free up to 25GB storage

Domain [5] technologies

→ Deploy & manage infrastrueter

[1] Cloud ~~Form~~ Formation :- IAA , Provisionis , accros regions

[2] systems managers(ssm) : like ansible , to mange fleet of servers (linux & windows)

[3] service Cataloge :- Catalog for product, Dev can use , organized by Portfollo

→ Monitoring :-

[1] Cloudwatch :- Performane, resources, Container and event logs related to Performence & usage → Can send Alarms
- Collect Metrees

[2] Cloud trail : Capture users activities & API Actions
- integrated with Cloudwatch to make events human readable

[3] Aws service health Dashbord (Public)

[4] ——— Personal ~ :- for apps you used but recommedtions will ~~based~~ on your support Plan include on all Plans

→ Application Integrations (Decoupling)

[1] SQS :- Queueing , Decouple components
- Server less

[2] SNS :- Pub\sub , sent text, email, HTTP notification

[3] event Bridge :- Pub|sub , like SNs , but sub can set Rules for who's recive , Can schadule events , Predefined schemas , support third party like shopify

→ Build & Deploy Coding

[1] Cloud 9 :- browse IDE to write codes, allow Developers to upload images into S3 using Programming languages

[2] Code Commit :- Private Repo

[3] Code Build & test :- CI tool

[4] code deploy :- to instance , Manage infrastrueter for you

[5] Codestar :- Interface to manage all of this

[7] Code Pipline :- CD tool

→ Data analytics service

[1] Athena :- serverless to analysis Data on S3 using SQL Queries

[2] Kinesis Family :- for real time streaming
- Used to recognition Customer Faces anti thift

[3] Quicksight : Bussiness intelligence , makes you Build your Dashboard of logs

[4] EMR :- hosted hadoop, Apache spark for Big Data proccessing using cluster
- For large - scale, machien learning
- Support sql Queries

→ other services from the exams

[1] Penetration test :- customer can Perform it on his EC2 لاختبار الاختراقات

[2] X-Ray :- to debug apps , Devolpers use it to defin root cause of Probles but on apps level not on security lik AWS Detective

[3] Aws CodeGuru : Developer tool , help in How to improve quality of code , remove expensive lines

[4] Aws Polly :- Convert text to speach
يقرا الكلام ويحوله لصوت

[5] Aws transcribe :- audio to text , search by audieo and media subtitle ترجمة

[6] Elemental media Converter :- Viedo Procesor X

[6] Aws translator :- like transcribe —

[7] Aws sagemaker : for build & Deploy ML models

[8] Aws rekognition : AI to analyze media, give you human view about it

→

9 Amazon Connect :- Contact Customer service

10 Amzon Pinpoint :- Flexable inbond & outbound markting teams, Can send bulk of markting emails

11 Aws ~~operation Hub~~ system manger :- operation Hub help You to manage all of Your Resource

12 Aws Compute optimizer:-
- recommends optimal Aws resource to Reduce Cost and improve Performance using AI and analyze Your metrices

13 Amazon Cognito:- Sign-In using API of Your social media
- authentication and Access Control to web and mobile

14 Aws Glue: Serverless data integration service, Combine Data for analysis, Machien learning

15 AMI:- amazon machin image, pre-configured to start EC2

16 Amazon Personalize: Developer use it to show products recommendtion based on Customers visit

17 Aws Device Farm: Developer use it to test apps Desktop or mobile like end users

18 Aws out Post: Full manged Aws Cloud Can be installed on Your on-Prem

4

* How Aws caculates:-
1 one Data transfered out of cloud
2 Compute & storage usage, Consumed

* to improve Content Delevery:-
1 use cloud front 2 S3 to store

* servecice always free:
1 OU 2 Control tower ~~3~~
3 DynamoDB (up to 25G)

* 2 ways to create RDS:-
1 Console 2 cloud formation templet

* 2 way to analyze costs:
1 cost explorer 2 cost & usage report

* 2 ways to auto Provisioning
1 Cloud formation
2 elastic Beanstak

* examples of serverless:-
1 SQS 2 Glue 3 lambda
4 fargate

* vertical scaling (up & down)
= increase resource

* Herozontal (in/out)
= increase machiens

* to Reduce cost :- 1 use reserved instance
2 Apply ASG

* examples of server-based services:
1 Redshift 2 RDS

* example of global scop services:
1 Aws cloud front 2 Route53

نرجع لعلمنا

b Domain [3]

→ Aws support plans

[1] Basic (Free) & limited security checks

[2] Developper :- healthcheck & client side disgoin tool
- Bussines Hour email support
- unlimited cases from 1 contact

[3] Bussiness :- 24X7 support email, chat, Phone
- unlimyted cases from unlimited contact

[4] entrprise :- (Critical work, TAM), support for Billing, < 15 systemdown

[5] enterPrise on - Ramp (entrprise + Bussine)

+ Both is support programatic cases managment

→ Support service :-

[1] trusted advisor :- give you recommendtion of cost, Performance, security, fault
- based on you support Plan, you can use

[2] Proffessinal consluting service

[3] knowledge center (FQs)

[4] white Papers (Aws experts)

[5] Blog

[6] Aws Abuse team: report any abuse issue to thim, ex DDos attack comes from your ec2 instance

Domain [4] Pricing & Billing

→ Ec2 Pricing

[1] on-demand : easy but expensive and can't be interpted

[2] spot :- 90, No upfront

[3] reserved : 1-3 years: ~~30~~ 60 up to 72%

[4] saving plan :- on-demand + reserved
extra will be charged as on-demand

Note :- linux machien, Per second but at least one minitues

→ Billing services

[1] OU: multiple accounts in one place, one Bill
- manged by Aws tower
- you can share discounts to accounts & critical resource

[2] Cost allocation tag :- group and filiter charges (categorize & track cost)

[3] Billing Dashboard :- costs Per service
- forecast

[4] Cost explorer :- More details filiter by region, services
- fore cast charges

5) simple pricing calculator : for Public to give an estimated cost for service you choose

[6] Budgets :- creat alarms & track costs service, region alarms filiters
- forecast spent

(7) Cloud watch billing alarms ; in Billing limited, alarm for actual cost, service filter only

(8) Control Policy + Permission on OU

* In memory Database, 2 types [8]

[1] Amazon memoryDB (Redis) , ultra Fast Performance so used with games

[2] Elastic cach :- Full managed for Flexable- real-time use cases.

* for Free services

[1] Elastic Beanstak :- Pay only for Resource that you will use, so it's Free

[2] Redshift :- Free up to 25GB , Based on PostgreSQL

[3] Control tower : always free

* for any compute saving Plan Question, think about serverless

* Shared Controls :- means security shared needs Patch Managment

* servic that auto Scalable

[1] DynamoDB [2] lAMBDA [3] EFS

- Aws ops works: for Chef and Puppet

* Aws Code Artifact :- Full-manged Rep. to share and Publish Packages

* Server Access logging : get security and Access Audit of S3

* inherit from Aws = Aws who responsible about it

* startup Company should join Bussines Plan