

## → Elastic Container Service for Kubernetes (EKS)

- Makes it easy to run Kubernetes on AWS, without needing to install, operate & maintain, anything.
- EKS automatically manages the availability & scalability of Kubernetes.

## → Amazon Neptune

- is a fast, reliable graph database service.
- Used for build & run applications with that work with highly connected datasets.

## → AWS Migration Hub (MH)

- provides single location to track the progress of application migration across multiple AWS, & other accounts.

## → Amazon API Gateway (API)

- fully managed service for developers to develop, publish, maintain, monitor & secure APIs.

## → CodeStar

- Quickly develop, build & deploy Application on AWS.

## → CodeCommit

- Source-Control Service that hosts secure Git-based repos.

## → CodeBuild :

- Compiles source code runs tests & produces Software packages.

## → CodeDeploy :

- Automates Software deployments.

## → CodePipeline

- Continuous delivery service helps in automating releases from pipelines for fast & reliable applications.

## → X-Ray :

- Analyze & debug production, distributed applications.
- used to understand how application is performing.

## → 6 pillars of AWS Architecture Framework

- ① Operational Excellence
- ② Security
- ③ Reliability
- ④ Performance Efficiency
- ⑤ Cost Optimization
- ⑥ Sustainability

## Auto Scaling

- Scaling workloads based on ITT & traffic load needs.
- Scaling to Optimize performance & costs.
- EC2 AutoScaling provides elasticity & scalability.

## Elastic Load Balancing (ELB)

- Automatically distributes incoming application traffic across multiple targets.

## Data Warehouse

- Process of collecting & storing large amount of data for analysis & reporting.

## Redshift

- It handles large-scale data warehouse & analytics workloads.

- Petabyte-scale data warehouse service

## Athena

- Users can write SQL queries against data storage in JSON extensive results.

- It supports data formats such as CSV, JSON, ORC.

- Powerful tool for performing ad-hoc queries.

## → AWS Glue

- Users can define ETL jobs using a drag & drop integration or by writing code.
- Serverless Data integration service, makes data preparation simple, faster & cheaper.

## → Amazon Kinesis

- Analyze real-time streaming data.

## → Elastic Map Reduce (EMR)

- It's designed to process large amount of data using popular big data processing frameworks like Apache Hadoop, Apache Spark & Apache Hive.
- performs big data analytics.

## → Pipelines

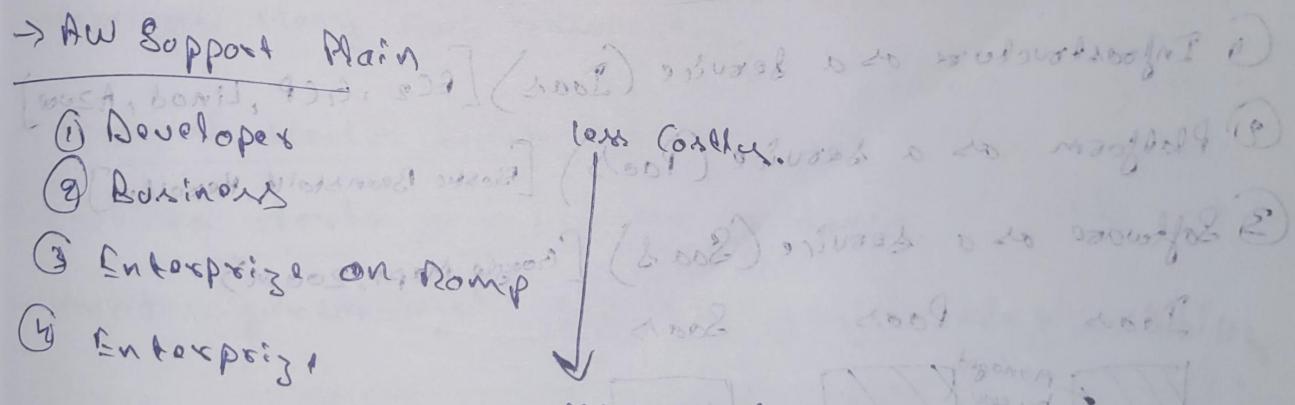
- Used to move data b/w different AWS services & on-premises data source.

## → QuickSight

- Provides interfaces for creating & sharing visualizations.

- Simple Notification Service (SNS)
  - sends notifications from the cloud.
- Simple Queue Service (SQS)
  - send, store & receive messages in a queue account.
- Simple Workflow Service (SWF)
  - coordinate work across distributed Application components.

- Amazon MQ
  - Managed message broker service for Active-MQ.
  - Messaging Service.
- Step Functions
  - Virtual workflows for distributed Applications.



### → AWS Budgets

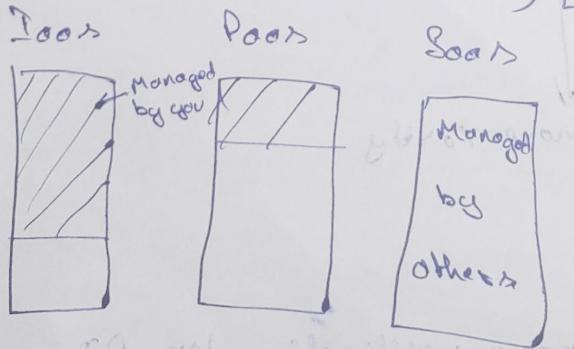
- track cost, usage, coverage & utilization for RT.

- = → 6 Advantages of Cloud Computing
- ① Reduce fixed expenses for variable expenses.
  - ② Benefit from massive economies of scale.
  - ③ Stop guessing capacities.
  - ④ Increase speed & agility.
  - ⑤ Stop spending money running & maintaining data centers.
  - ⑥ Go global in minutes.
- 3 types of Cloud Deployment Models

- ① Public cloud (AWS, Azure, GCP)
- ② Hybrid cloud (mix of public & private cloud)
- ③ Private cloud (on-premise) = managed by own data center  
ex: Hyper-V, Openstack, VMWare

→ Cloud Computing Models

- ① Infrastructure as a Service (IaaS) [EC2, GCP, Linode, Azure]
- ② Platform as a Service (PaaS) [Elastic Beanstalk, Heroku]
- ③ Software as a Service (SaaS) [Google Maps, Zoho, etc.]



## AWS Organizations

- Manage your environment as you centralize your AWS resources.
- Combine multiple AWS accounts into an organization to centrally manage.

## Control Tower

- Set up & govern a secure, multi-account AWS environment.

## Config

- Access, audit & evaluate the configuration of AWS resources.
- configures history

## System Manager

- Manages, monitors & manages AWS resources.

## Personal Health Dashboard

- provides alerts & remediation guidance.
- provides personalized view into performance & availability.

## OpsWorks

- Configuration management service that provides managed instances of Chef & Puppet.

## → Trusted Advisor :

- Real time guidance to help provision resources
- Checks help optimize your AWS infrastructure

## → CloudFormation

- Common language for you to describe & provision all infrastructure resources in cloud.

## → Elastic Compute Cloud (EC2)

- Broadest & deepest compute platform, with over 750 instances deployed across 3 regions.

## → Elastic Container Service (ECS)

- highly scalable performance Container Management service that supports Docker, containers & application managed cluster of EC2 instances.

## → AWS Lambda

- Run code functions without provisioning servers
- Runs code in response to events & automatically manages the compute resources, making the fastest way to turn an idea into modern, production serverless applica.

## Lightail

- for new users, who need to deploy simple website.
- with less traffic can use lightail.
- Launch simple web application.
- low-cost.

## Amazon Beanstalk

- using source code & configuration files to build website.
- upload code, Beanstalk automatically handles deployment.
- Deploy & Scale web application.

## Batch

- Batch processing for ML model training, simulation & analyses at any scale.

## Route 53 :-(DNS Service)

- Reliable & cost-effective way to route end users to internet application.
- It routes end users to internet applications by translating names like www.google.com to something like 16.90.0.0.

## Cloud Front

- It is a Content Delivery Network (CDN).
- Securely deliver content with low latency & high transfer speed.

## → Transit Gateway :

- Connects your Amazon virtual private cloud (VPCs) & on-premises network through central hubs.

## → DynamoDB

- Stores data as a collection of key-value pairs.

- Stores various types of data including simple & compound objects.

## → DocumentDB

- Store data in JSON format.

## → ElastiCache

- In-memory Database stores data for low-latency access.

## → Neptune

- NOSQL database. Query data with specific graph language.

## → TimeStream

- Stores data in time order. & can query data over various time intervals.

## → Quantum Ledger

- Stores data in an immutable, transparent & cryptographical log.

- Can track each & every application data change & maintains verifiable history.

## Relational Database Service (RDS)

Setup, operate & scale a relational database in the cloud with just a few clicks.

AWS Global Infrastructure is made up of:

- ① 33 Launched Regions w/ ref resources of 2M users.
- ② 105 Availability zones
- ③ 115 Direct connections locations
- ④ 600+ Points of Presence
- ⑤ 38 Local zones.
- ⑥ 24 wavelength zones.

## Identity And Access Management (IAM)

- Provides multiple users secure access to AWS resources.
- Manage workload & workforce identities across AWS accounts.

## Rekognition

- Add image & video analysis to your applications.
- Identify objects, people, text, scenes & activities in images & videos.

## Transcribe

- Speech to text converter

## Text-to-Text

- Automatically extract printed text, handwriting & data from any document.

## SageMaker

- prepare, build, train & deploy high quality ML models

## → Comprehend

- NLP Service.

- Uses ML to uncover information in unstructured data.

comes with built-in NLP tools

## → Lex

- AI for chatbots.

- Build conversational interface into any application using voice & text.

## → Polly

(TTS) drives game & movie text synthesis

- Text to speech conversion

drives news stories, subtitles, audiobooks, etc.

## → Forecast

- Time series forecasting service

uses ML to predict future cabin occupancy

## → DevOps Guru

- improves application (Operational) performance & availability with ML powered operations.

## → Macie

- fully managed data security & data privacy service that uses ML & pattern matching.

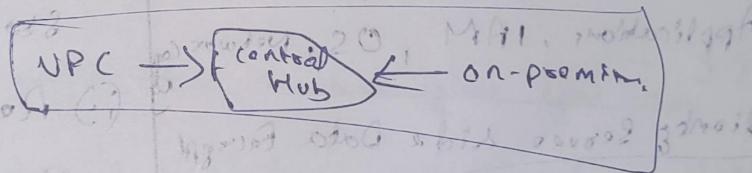
Cloud Trail : (Records API activities) Date 2023-01-01  
Security Monitoring & Operational troubleshooting by tracking user activity & API usage.

→ CloudWatch : (Monitoring Service) Date 2023-01-01

→ Guard Duty : (Machine learning service) Date 2023-01-01  
Threat Detection service that continuously monitors for malicious activity & unauthorized behaviour.

→ Transit Gateway Date 2023-01-01

- Connect
- network transit hub that you can use to interconnect your VPC & on-premises network.



→ PrivateLink Date 2023-01-01

- Establish connectivity b/w VPC & AWS service without exposing data to the internet.

→ Compliance Date 2023-01-01

- maintains security & data protection in the cloud.

→ Artifact : Date 2023-01-01

- It provides on-demand access to security & compliance reports from AWS.

## → AWS WAF (Web Application Firewall)

- Protects against common exploits

## → AWS Shield

- DDoS protection service.

## → Key Management Service (KMS)

- Centralized control over the encryption keys used to protect your data.

## → Shared Responsibility Model

CUSTOMER (Security in)

Implementation of security best practices

AWS (Security Out)

- (i) Customer Data, Platform, Applications, IAM, OS, Network
- (ii) Client-Side Data Encryption
- (iii) Network Traffic Protection

AWS Software, Compute, Storage, Database, Network

- (i) Regions, Availability Zones, Edge Location

## → Simple Storage Service (S3)

- Built to store & retrieve any amount of data, quickly
- S3 Storage Classes
  - (1) S3 Standard
  - (2) S3 Intelligent Tiering
  - (3) S3 Standard-IA

more expensive

- (1) S3 Standard
- (2) S3 Intelligent Tiering
  - more expensive
  - more bandwidth required
  - fast access time
- (3) S3 Standard-IA

④ \$3 One-Zone IA

⑤ \$3 Glacier Instant Retrieval

⑥ \$3 Glacier Flexible Retrieval

⑦ \$3 Glacier Deep Archive.

→ Elastic Block Storage (EBS)

- provides persistent block storage volumes for use with Amazon EC2 instances

→ Elastic File Storage (EFS)

- automatically grows & shrinks as you add & remove files with no need for management or provisioning tools

→ Storage Gateway

- hybrid cloud storage service that gives you on-premises access to virtually unlimited cloud storage

→ Backup

- offers centralized backup console, API & command line interface for managing backups across AWS services

→ Snowball

- optimized for off-premises data transfer

→ Snowfamily (physical devices)

- group of devices that transport data ~~out of AWS~~

① Snowcone (8TB)

② Snowball (80TB)

③ snowmobile (100 petabytes) biggest

→ Kendra allows developers to add search capabilities to their applications.

→ AWS Fargate (Container Service)

- allows developers to build applications without managing servers

→ VPC Interface Endpoint

- enables customers to privately connect to supported AWS services & VPC endpoint services by AWS PrivateLink

→ Aws DataSync

- automates & accelerates moving data b/w on-premises & AWS services using various storage services

& AWS Storage Service

→ Cloud HSM (Manage encryption keys)

- Cryptography Service for creating & maintaining hardware security modules

→ AWS Fault injection Simulator (FIS)  
• helps in implement chaos Engineering  
• different environments, lambda, API

→ AWS Inspector

- Automated Vulnerability Management Service:
- Scans AWS Workloads for Software Vulnerability.

→ Aurora (Relational Database)

• Unparalleled high performance & availability at global scale with MySQL & PostgreSQL compatibility.

→ Outputs

- offers AWS infrastructure, services, APIs & tools to virtually any data center.
- is ideal for workloads that require low latency access to on-premises systems.

→ wavelength

- Used to optimize for mobile edge computing applications.

→ Local Zones

• It places AWS Compute, Storage, databases & other selected services close to large populations.

• Provides low latency Access.

## → Security Groups

- Acts as a virtual firewall for your EC2 instances to control incoming & outgoing traffic.

## → OpsHub

- Geographical User interface to manage AWS services from anywhere

## → AppStream 2.0

- non-persistent application & desktop streaming service
- centrally manage your desktop application on Appstream

## → Transfer Family

- Transfer files over SFTP, FTPS & FTP directly into & out of Amazon S3 & EFS.

## → Managed Blockchain

- Allows you to join public networks (or) set up & manage scalable private networks

## → Well-Architected Tool

- helps review the state of your workloads & compares them to the latest AWS Architectural best practices.

## > Cost Explorer

- Explore costs & usage at both a high level, detailed analysis.

## > Marketplace

- is a digital catalog with thousands of software listings from independent software vendors, makes it easy to find, test, buy & deploy software that runs on AWS.

## > Pricing Calculator

- lets you explore AWS services & create an estimate for the cost.

## > Elastic Transcoders

- converts media files that you have stored in S3 into media files in the formats required by consumer playback device.

## > Partner Solutions / Quick Starts

- automated reference of deployments for their workloads.

## > IoT Connector

- connect IoT devices to AWS Cloud.

## > Connect

- allows you to build product catalog, easy to use omnichannel cloud contact center helps in providing superior customer service at lower cost.

## → Control Tower

- provider easiest way to set up & govern new  
business, lower effort & cost to setup, etc.
- secure, multi account AWS environment

## → Web Application Firewall Layers

\* Layer 7 :- helps you monitor the HTTP & HTTPS

proto to detect malicious requests based on most  
AWS security best practices of good, bad, and ugly of  
the documents.

\* Layer 3 :- (Network Layer)

- AWS Shield offers protection at this layer
- WAF doesn't offer protection

\* Layer 4 :- (Transport Layer) Data transmission occurs using  
TCP or UDP Protocol.

- AWS Shield offers protection against DDoS attacks.

- WAF doesn't protect against TCP or UDP attacks.

## → Route 53 Policy :- (Weighted Routing)

① Weighted Routing :- lets you associate multiple  
resources with a single domain name.

- can choose how much traffic is routed to each  
resource.

② Failover Routing :- used when you want to configure  
multiple regions backends forward and offload  
active-passive failover.

- used to redirect another request after a failure in  
one region to another.

③ Simple Routing : Route traffic to a single resource, for ex. to a web server for your website.

④ Latency-based Routing:

Used when you have ~~multiple~~ resources in multiple AWS regions & you want to route traffic to the region that provides the best latency.

→ Secrets Manager:

• helps you protect secrets needed to access your applications, services & IT infrastructure.

→ System Manager:

• gives you visibility & control of your infrastructure on AWS.

• provides unified user interface.

→ AWS services that support reservations to optimize cost

ex.:

① EC2

• supports auto scaling and reserved instances.

② DynamoDB

• provisioned throughput.

③ ElastiCache

• provisioned throughput.

④ RDS

• provisioned storage.

⑤ Redshift

→ If 30 sec. instance is used you have to pay for 60 sec..

• 1-minute minimum charge.

→ OpenSearch : good for different types of search engines.  
• performs, interacting log analytics, real-time monitoring, web search & more.

• previous known problems.

→ Customer Managed Keys (CMK) :  
• major part of different store of AWS services.  
• CMK are KMS keys in that you create, own, manage.

→ Managed Keys : are those keys in your account that are created, managed by AWS, used on your behalf by AWS.

→ Owned Keys : are collections of your keys.

→ Instance Store : provides temp block-level storage.

→ Edge Location : houses to cache copies of the content for faster delivery to users at any location.

→ which budget types can be created under AWS Budgets

- Cost budget
- Reservation budget
- Usage budget

→ cost of per unit of usage basis as mentioned per day.

→ spend remaining volume.