## AWS 10000 Feet Overview

### Global Infrastructure:

#### Regions:

* A Region is geographical area consisting of 2 or more availability zones

#### Availability Zones

* Logical Data centers. At least 2 in each region

#### Edge Locations (Endpoints)

* Geographically dispersed endpoints for CloudFront. Many more edge locations exist than regions

#### Infrastructure Services

* Container Services
  + EC2
  + RDS
* Abstracted Services
  + Storage
  + Etc.

### The AWS Platform

* **Networking & Content Delivery**
  + VPC– Virtual Data Center. Multiple VPCs per region. VPCs can be connected to each other via peering allowing them to appear as a contiguous network.
  + Route53 –DNS Service
  + CloudFront – Content delivery network. Edge locations located around the world.
  + Direct Connect – Connect your on-prem data center to AWS using dedicated links
  + API Gateway
* **Compute**
  + EC2 – Elastic Compute Cloud. (Virtual machines)
  + ECS - EC2 Container Services – supports Docker.
  + ElasticBeanstalk - Upload code here. Elastic Bean stalk will take care of all provisioning
  + Lambda – Functions as a service
  + Lightsail – To deploy EC2 instances for the non-technical
  + Batch: Batch processing
* **Storage**
  + S3 - Object based storage. Stored in buckets
  + Glacier – Archive files from S3 into Glacier
  + EFS (Elastic File Service) - Block Store - can be used for storing databases. It can be attached to multiple EC2 instances.(NAS)
  + Storage Gateway (VM) - communicates between your data center and S3 storage.
  + Snowball: Truck of data (TBs)
  + Storage Gateway: Virtual Appliances for datacenters that will replicate to S3
* **Databases**
  + RDS ( MySQL, PostgreSQL, SQL Server, MariaDB, Aurora)
  + DynamoDB - Non relational DB (NoSQL)
  + Redshift  - Data warehousing system
  + ElastiCache - Cloud in-memory DB (mem-cached, Redis)
* **Migration**
  + Snowball - Transfer Data - next step over Export Import gateway. Store all your data from enterprise into Snowball and then ship to AWS.
  + Snowball edge – add compute (Lambda) to storage device – so that you can run analytics on top of the huge dataset collected, without having to transfer to cloud.
  + DMS - **Database migration services** - migrate existing DBs to Cloud, also migrate existing Cloud DBs to other regions. Can migrate from Oracle/MySQL/PostgreSQL/ to Aurora.
  + SMS - **Server migration services** - migrate existing VMs on premise to the Cloud -up to 50 concurrent ones.
  + AWS migration Hub: Application tracking as you migrate
  + App discovery service
* **Analytics**
  + Athena - allow SQL queries on S3. Run queries on csv files in S3 buckets.
  + EMR -Elastic Map Reduce - process large amounts of data. Based on Hadoop, Apache Spark
  + Cloud Search - Managed Search engine services provided by AWS
  + ElasticSearch – Search service which uses the Elastic product
  + Kinesis - streaming and analysis real time data (important for architect exam). used for collating large amounts of data streamed from multiple sources
  + Data Pipeline - move data between Services. e.g. S3 into DynamoDB and vice versa
  + Quick Sight- BI tools for rich visualizations and dashboards.
  + Glue: ETL (Extract/Transform/Load)
* **Security & Identity**
  + IAM – Important for all AWS exams. How you setup and assign users / groups etc.
  + Inspector - Agent which inspects your VMs and does security reporting
  + Certificate Manager – free SSL certs for your domain names.
  + Directory Service - AD integration (important for architect exam)
  + WAF - Web Application Firewall. Allows application level protection. Different from traditional network level firewalls. You can inspect headers / content
  + Artifacts - All Compliance Documentation - under compliance and reports.
  + Cognito – Device authentication
  + GuardDuty
  + Macie: Scan S3 buckets for PII
  + CloudHSM: Physical hardware security module
* **Management Tools (important for architect exam)**
  + CloudWatch - Monitor Alerts/performance of AWS environment – standard infrastructure metrics.
  + CloudFormation - Infrastructure into Code - document which describes the infrastructure which uses AWS resources.
  + CloudTrail - audit usage of AWS Resources. Important for security exam.
  + OpsWorks - automate deployments using Chef. Important for sysops exam
  + Config Manager - monitors environments and **provides alerts for events**. E.g. someone creates a security group which is against policy
  + Trusted Advisor - automated tips for cost & performance optimization, security tips, architecture and design (much Tested)
  + Config: Monitors config of whole environment. Maintains snapshots
  + Service catalog: catalog of all services approved for use
  + System manager: patch maintenance, rolling out code, group resources
  + Managed Services: AWS will manage for you
* **Application Services**
  + Step functions – visualize application internals – which micro services is your application using. Manage Lambda functions
  + SWF - Simple Workflow Service. Used in Amazon fulfillment center.
  + API Gateway - Create, Publish & monitor API services. Access back-end services.
  + AppStream - Stream desktop services via browser
  + Elastic Transcoder - convert video into multiple formats to suit all devices
  + Amazon MQ (rabbit MQ)
  + **SNS –** Simple Notification Service
  + **SQS** – Simple Queue Service
* **Developer Tools**
  + Code Commit – Source Control Service Private Git
  + Code Build - pay by minute of build & compilation
  + Code Deploy – deploy code to EC2 instances.
  + Code Pipeline – Track code versions in different environments. Continuous Delivery
  + CodeStar: Project managing code collaboration tool
  + Code Pipeline: Continuous delivery system
  + X-Ray: analysis of source code
  + Cloud9: IDE
* **Mobile Service**
  + Mobile Hub – Management Console for mobile apps
  + Cognito - identity provider for mobile applications. Social identity providers – Gmail, Facebook OAuth providers.
  + Device Farm - testing your apps across multitude of devices
  + Mobile Analytics – Collect application usage data in a cost-effective way.
  + Pinpoint – Targeted push notifications for mobile apps
  + AppSync: Updates data and apps
  + Mobile Analytics
* **Business Productivity**
  + Work Docs – Store work documents on cloud (Dropbox)
  + Work Mail – Office 365/gmail alternative
  + Alexa for Business:
  + Chime: Video conferencing
* **Internet of Things**
  + IOT
  + IOT Device management
  + FreeRTOS: OS for real-time microcontrollers
  + Greengrass: software for capturing data securely
* **Desktop and App Streaming**
  + WorkSpaces - aka VDI. Desktop on cloud. Citrix Receiver
  + App Stream 2.0 - stream desktop apps to users.
* **Artificial Intelligence**
  + Alexa (which uses Lambda) + Lex. Echo isn’t required anymore to use Alexa. It can be accessed via software.
  + Polly - Text to Speech
  + Machine Learning – based on dataset, AWS will predict outcomes for future decisions – based on demographics etc.
  + Rekognition – Image recognition, Facial recognition based on Databases.
* **Messaging  (important for associate exam)**
  + SNS – (Simple Notification Service)Notify by email / text messages/ http-end points
  + SQS - Post messages to Queue. De-couple your applications.
  + SES – send email via AWS
* **Media Services**
  + Elastic Transcoder: Video transcoding and resizing
  + MediaConvert: File based transcoding
  + MediaLive: Live broadcasting streams
  + MediaPackage: Package over internet
  + MediaStore: Optimized storage
  + MediaTailor: Media for targeted advertising to media streams
* **Machine Learning**
  + SageMaker: Deep learning (neural)
  + Comprehend: Sentiment analysis
  + DeepLens: AI aware camera. Local decisioning
  + Lex: AI way of chatting with customers
  + Machine Learning:
  + Polly: Takes text and turns into speech
  + Rekognition Video and images recognition
  + Translate: language translation
  + Transcribe: Speech to text streaming (Closed captions)
* **AR/VR**
  + Sumerian: Language for AR/VR (Preview)
* **Customer Engagement**
  + Connect: Contact center as a service
  + **SES: Simple Email Service:** Mass emailer
* **Desktop and app streaming**
  + Workspaces: virtual desktop
  + Appstream 2.0
* **Game development**
  + Gamelift