

### EC2 Instance Store

- EBS
  - Persist data if terminate
  - Mount one instance at time
  - Bound specific AZ
- EBS Snapshot
  - Backup EBS
  - Copy across AZ or region
  - Feature:
    - + Archive
    - + Recycle Bin for EBS Snapshot
- AMI
  - Customization EC2
  - Launch instace From (public AMI, private AMI and AWS Marketplace AMI)
- EC2 Image Builder
  - Create, maintain, validate, test EC2 AMI
  - Can run schedule
  - Free service
- EC2 Instance Store
  - Lose storage if stop
  - For buffer or cache
- EFS
  - Can mounted 100 EC2
  - Work linux-multi AZ
  - EFS-IA (Infrequent Access): Auto move file EFS to EFS-IA
  - FSx:
    - + Launch 3rd party
    - + Build on Window File Server
    - + Integrate Microsoft Active Directory

### Elastic Load Balancing & Auto Scaling Group

- Elastic Load Balancer
  - 3 kind:
    - + Application load balancer (HTTP/HTTPS - layer 7)
    - + Network load balancer (TCP - layer 4)
    - + Classic load balancer (layer 4 & layer 7)

### Elastic Load Balancing & Auto Scaling Group (cont)

- Auto Scaling Group
  - Ensure min max instance run
  - Register new instance
  - Replace unhealthy instance
  - Scaling strategies:
    - + Manual Scaling
    - + Dynamic Scaling
      - => Simple/Step scaling
      - => Target tracking scaling
      - => Schedule scaling
    - + predictive scaling
- S3
  - unit name
  - S3 global, bucket region
  - S3 contain:
    - + bucket
    - + Object
- Snow Family
  - Data migrate:
    - + Snowcone (8TB)
    - + Snowball Edge (80TB) (TB or PB)
    - + Snow mobile (EB) better > 10 PB
  - Edge computing
- OpsHub
  - Software manage snow family
- AWS Storage Gateway
  - Connect on-premise and cloud
  - Type:
    - + File gateway
    - + Volumn gateway
    - + Tape gateway

### Database

- AWS RDS
  - Multi AZ
  - Scale verticle and horizontal
  - Store blocked by EBS
  - Simlify for database admin
- Amazon Aurora
- Amazon Elastic Cache
  - Cache for RDS



### Database (cont)

DynamoDB - 100TB  
 - Type:  
 + standard  
 + Infrequent Access (IA)  
 - Integrate IAM

DynamoDB Accelerator (DAX) Cache for DynamoDB

Redshift Warehouse

EMR (Elastic MapReduce) Big data, hadoop

Athena analyze data S3

QuickSight - Machine learning  
 - Business intelligent (BI) service

DocumentDB For mongoDB

Neptune - Graph database  
 - For social network

QLDB (Quantum ledger database) book (ledger)

Amazon manage blockchain blockchain

AWS Glue extract, move S3

DMS (Database migrate service) - Migrate  
 - Support:  
 + Homogeneous migrates  
 + Heterogeneous migrates

### Other Compute

ECS - Launch docker container  
 - not serverless  
 - Integrate Application load balancer

Fargate - launch docker container  
 - Serverless

ECR (Elastic Container Registry) Store docker image

AWS Lambda - You only upload code, lambda will run code deploy for you  
 - Java, Nodejs, Python

### Other Compute (cont)

Amazon API Gateway - Build a serverless API

AWS Batch - Launch EC2 or Spot Instance  
 - Run by docker image & run on ECS

Lightsail Simple create server for people little experience

### Deploying and Managing Infrastructure at scale

Cloud Formation - Is a declarative way of outlining your AWS Infrastructure  
 - Repeat across region & account.

CDK (Cloud Developer Kit) Define infrastructure by language program

Elastic Beanstalk - Developer centric view of deploy app on AWS  
 - Easy to user service deploy  
 - Paas  
 - Free

AWS Code Deploy - Deploy app auto  
 - Hybrid service  
 - Config CodeDeploy Agent

AWS Code Commit git repository

AWS Code Build Compiles source code, run test

Code Artifact Manage depend on software package (npm, ...)

Code Star - Unified UI manage software in one place  
 - Can edit Cloud 9

Cloud 9 Cloud IDE

SSM (Amazon System Manager) - Manage EC2 and on-premise  
 - SSM session manager: start shell on EC2 not SSH not port  
 - UI view operational data

Opswork chef & puppet



### Global Infrastructure

Route53	is a manage DNS
CloudFront	- Content delivery network (CDN) - DDos protect - File cacshe - Static content
S3 Cross Region Relication	- File update realtime - Read only, dynamic content
S3 Transfer Acceleration	Upload and download file to S3 bucket
AWS Global Accelerator	- Improve global app and performance - 2 any cast ip - Integrate Sheild - No cache - Improve TCP or UDP
AWS Outposts	- Hyrid - Server racks - Access AWS Infrastructure on - premise
AWS Warelength	5G Network
AWS LocalZones	place seservices closer to user

### Cloud Intergration

SQS	Queue
SNS	Push notifier
Kinesis	- Streaming - Type: + Data stream + Data Fire house + Data analytic + Video streaming
Amazon MQ	- For RabbitMQ, ActiveMQ - have SNS & SQS feature.

### Cloud Monitoring

Amazon CloudWatch	- Metrics: various monitor - Alarm: Trigger notify for metric - Logs: Realtime monitor log
Amazon EventBridge	Service allow access realtime change of AWS Service under SaaS
CloudTrail	- Governance, compliance and audit your account - Resource deleted => view CloudTrail - Record API your account
AWS X-Ray	- Debug in production
CloudTrail Insight	Auto analysis cloudtrail event
Amazon Code Guru	- Code review and recommend - 2 function: Code Guru Reviewer and Code Guru Profier
AWS Personal Health Dashboard	Remendiation guide when AWS experyency may impact you
AWS Services Health Dashboard	Status all AWS service across all regions

### VPC

Internet Gateway	Help VPC Connect internet
NAT Gateway	- Private subnet to access internet - AWS manage
NAT Instance	- Private subnet to access internet - Self manage
NACL (Network ACL)	Firewall controls traffic to subnet
VPC Flow Logs	Capture info IP
VPC Peering	Connect two VPC
VPC Endpoint	Allow connect AWS Service use private network
AWS PrivateLink	Most secure & scalable way to expose a service to 1000s of VPCs.



### VPC (cont)

DX (Direct connect)	- Make easy establish a dedicate connect form on-premise network to one or more VPC in same region - Private connect form data center to AWS
Client VPN	Connect your compute to private network user open VPC
Transit Gateway	Transitive peering between thousand of VPC and on-premise, optimized network

### Security and Compliance

WAF (Web Application Firewall)	- Protect your web app (layer 7) - Protect SQL Injection, cross site scripting
Penetration Testing	Customer test infrastructure AWS
AWS KMS	Encryption
Cloud HSM	Encrypt hardware
ACM (AWS Certificate Manager)	SSL/TLS Certificate
AWS Secret Manager	Store secret
AWS Artifact	Customer access AWS compliance/Security document and AWS agreement
AWS GuardDuty	- Intelligent protect - Against crypto currency attack.
AWS Inspector	Auto security assetment
AWS Config	- Audit & recording compliance your AWS resource - Config AWS resources - Keep track change your resources - Have Service AWS Config Resources
AWS Macie	Protect your sensitive data

### Security and Compliance (cont)

AWS Security Hub	Central security tool across several AWS account and auto security check
AWS Detective	Analyze, quickly identifies root cause of security issue
AWS abuse	Report AWS resource use for abuse or illegal purpose

### Machine Learning

Rekognition	Find object, people, text, ...
Transcribe	Convert speech to text
Polly	Convert text to speech
Translate	Translate
Lex	Chatbot
Connect	Recieve call, message SMS
Comprehend	Natural language processing - NLP
SageMaker	Developer build ML Model
Forecast	Use ML to Forecast
Kendra	Document search (text, pdf, ...)
Amazon Personalize	Buil app realtime personal
Textract	Extract text, hand writing

### Account Management, Billing & Support

AWS Trust Advisor	- Tool realtime guidance help you provision your resource - Check security group for rules allow unrestricted access
AWS Cost Explorer	View cost
Cost Allocation Tag	Categories and track resource view billing
CTO Calculator	Estimate cost save between AWS and on-premise
AWS Pricing Calculator	Estimate a month bill resource use
AWS Budgets	Set custom budgets to track your cost and usage.
Cost And Usage Report	Dive Deeper in your AWS cost and usage



### Account Management, Billing & Support (cont)

Billing Alarm - Simple alarm cost  
- Not powerfull as AWS budget

#### AWS Basic Support Plan

AWS Business Support Plan (24/7) - Production workload  
- Phone, email, chat to Cloud Support Engineer

AWS Enterprise Support Plan (24/7) - Production or bussiness critaical workload  
- Mission critical workload  
- Access Technical Account Manage (TAM)  
- Concierge Support Team  
- Infrastructure event manage, well-architect & opertationo reviews

### Advanced Identity

AWS STS Security Token Services - Create temporary, limit privilege credentials

AWS Cognito (Simplified) - Identity for web and mobile  
- Sign up, sign in (SAML & OpenID)  
- You can create user by Cognito

AWS Directory Service - Manage Microsoft Active Directory

### Other AWS Service

Amazon Workspace - Virtual Desktop Computing  
- Manage desktop as services (DAAS) Solutions.

Amazon Appstream 2.0 - App streaming allow access vidual desktop

Amazon sumerian - VR, AR

Amazon IoT Core - IoT

AMazon Elastic transcoder - Convert media file S3 to media file

### Other AWS Service (cont)

AWS Appsync - Service allow developer build app with realtime or offline synced data.

AWS Device Form - Test web and mobile in browser

AWS Backup - Auto backup

DRS - Elastic Disaster Recovery - Quickly and easily recover your physical and cloud

AWS DataSync - Move large data on-premise to AWS

MGW AWS Application Migrate Service - lift and sift solution simle migrate app to AWS

FIS - Run test fault injection

AWS Fault Injection Simulator

AWS StepFunction - Build workflow order to lamda

AWS GroudStation - Controll Sattelite Communicator

AWS Pinpoint - Scale 2 way (outbound/invound marketing)

### AWS Architecting & Ecosystem

AWS Well-Architecture Tool - Review your architect 6 pillas

AWS Right Sizing - Process matching instance type size your requirement

AWS Marketplace - Digital catalog with thousand of software

AWS Training

AWS Professional Services & Partner Network - Is global team of export  
- APN = AWS Partner Network

AWS Knowledge Center - Most frequently & Common question

AWS IQ - Quicky find help

AWS re:post - Question and Answer Services



### Other

Quickstart	- Deploy popular technologies
AWS Storage gateway	- Hybrid cloud storage service
Services control policy (SCPS)	Are a type of organization policy you can use manage permission in your organization.
Service control policy (SCP)	Restrict account privilege
AWS Control Tower	Easy way to setup govern a secure and compliant AWS environment based on best practice
AWS Compute Optimizer	Recommend optimizer resource your workload
AWS Analyzer	Identity resource external
SWF (Simple Workflow services)	is a web services easy to coordinate work across distribute application component

### Experience

- 1) Advanced RDS database admin => simplifies
- 2) VPC include multiple AZ
- 3) AWS Trust Advisor: Tool realtime guidance help you provision your resource
- 4) AWS Health Dashboard: show issue impact your resource
- 5) AWS Cost Explorer: is used for view cost
- 6) S3 Store virtual unlimited
- 7) Cost Allocation Tags => categories and track resource after run view billing cost Explorer
- 8) Elasticity to resolve the issue of under utilization
- 9) AWS Direct Connect: provide private connect from data center to AWS
- 10) AWS Transit gateway: used for optimizing the network VPC and on-premise network.
- 11) EC2 hosts # Ec2 instance
- 12) Continually reduce price => economies of scale
- 13) Quick Start => deploy popular technologies on AWS
- 14) Cloud Formation => deploy infrastructure from template
- 15) AWS Artifact => provide access AWS security and compliance report.
- 16) AWS Config: used for compliance relating config AWS resource.
- 17) IAM grant for S3 bucket => update principal

### Experience (cont)

- 18) Launch EC2 Instance behind Elastic Load Balance => across multi AZ in a single AWS Region
- 19) Database access operating system => EC2
- 20) Dynamo DB => config (customer), backup (AWS)
- 21) A sole manage responsibility AWS => AZ manager
- 22) Agility - (fast, quick) in one click
- 23) Elasticity - Infrastructure scale based on demand.
- 24) Fault tolerance - Ensuring app stay available in the event of a fault.
- 25) TCO Calculator - estimate cost saving on AWS compare on-premise
- 26) AWS Pricing Calculator - Estimate a month bill resource use
- 27) IAM Roles not have standard long-term credentials
- 28) AWS Storage Gateway - hybrid cloud storage services
- 29) VPC establish connect between your on-premise network
- 30) AWS Budgets - set custom budgets to track your cost and usage
- 31) AWS config keep track all change your resource
- 32) In a higher available system the failure of a single component should not affect the app.
- 33) Quick Sight - business intelligent (BI) service
- 34) Elastic Beanstalk - Easy to use service deploy
- 35) Access key contain 2 part: an access key ID and a secret access key
- 36) Trust Advisor - check security group for rules allow unrestricted access
- 37) Service control policy (SCPs) - are a type of organization policy that you can use to manage permission in your organization
- 38) Network ACL: chặn IP cụ thể (block IP)
- 39) Access Analyzer: identity resource external
- 40) AWS System Manager: UI view operational data.
- 41) IAM user have an access key ID and secret access key
- 42) Shield => in a edge location
- 43) Amazon Cognito can add user sign-up, sign-in and access control web & mobile (SAML) and OpenID
- 44) GuardDuty: account continuous for malicious activity and unauthorized behavior.
- 45) AWS site-to-site VPN: encrypt traffic across your network + Amazon workspace



### Experience (cont)

- 46) Amazon App Stream 2.0: is non-persistent desktop and application services for remotely access your work
- 47) AWS managed services (AMS): adopt scale and operate more efficiently and securely. Easily leave a lot of the heavy lifting to AWS.
- 48) FSX - has standard server message block (SMB) protocol to access file over a network
- 49) Facility operation and hardware procurement cost are something you no longer to pay for in AWS cloud.
- 50) AWS Technical Account Manager: provide expert monitoring and optimization for your environment and coordinates access to other program and experts
- 51) The company is responsible for enabling encryption on the buckets S3
- 52) AWS Application Discovery Service: help you plan your migrate AWS, collect usage and config data.
- 53) AWS Resource Groups: manage and auto task on large number of resource in one place.
- 54) AWS Service Catalog: create and manage catalog IT services
- 55) SQS and Step Function: provide asynchronous integrate
- 56) Amazon EC2 Dedicated host: allow use your eligible software licenses from vendors.
- 57) Consolidated billing benefit: one bill, easy tracking, combined usage, no extra fee.
- 58) AWS Health API is available to business, Enterprise On-Ramp, Enterprise Support
- 59) AWS Storage & Gateway has gateway virtual Tape library to backup software.
- 60) Resource performance monitor, event and alert => Cloudwatch
- 61) Account - specific activity and audit => CloudTrail
- 62) Resource - specific change history, audit, compliance => Config
- 63) Service Health Dashboard display the general status personal Health Dashboard personal view.
- 64) CloudFormation => same AWS infrastructure across multiple AWS Account and regions
- 65) Elastic Load Balance - high availability, auto scaling and robust security.
- 66) U2F security key - use USB port on your computer

### Experience (cont)

- 67) Virtual MFA Sservice - software app
- 68) Hardware MFA Device - hardware device generate six-digit
- 69) SMS text message - SMS
- 70) AWS Computed Optimizer: provide EC2, ELB, Lambda, Auto Scaling; not provide EFS, S3.
- 71) Cloudwatch enable central log on-premise and cloud.
- 72) IAM Credential Report: là loại báo cáo liệt kê all user và trạng thái thông tin đăng nhập của họ.
- 73) IAM Access Advisor: là 1 cơ chế truy cập, show ra các quyền dịch vụ được cấp cho user và thời điểm dịch vụ đó truy cập lần cuối.
- 74) AMI: là loại thiết bị ảo để tạo 1 máy ảo
- 75) EFS: dịch vụ lưu trữ tệp
- 76) OpsHub: software quản lý Snow Family
- 77) AWS Storage gateway: hybrid access on-premise to AWS
- 78) AWS EMR: dịch vụ Hadoop (big data), kiểm soát cụm và phần mềm cài trên nó
- 79) Athena: analyze data S3
- 80) AWS Batch: run job batch trên nhiều AZ trong 1 region
- 81) Lightsail: tạo server cho người ít kinh nghiệm
- 82) Elastic Beanstalk: dịch vụ PaaS giúp dễ dàng triển khai và mở rộng ứng dụng web và dịch vụ
- 83) AWS Code pipeline: tự động hóa quy trình deploy cho các bản cập nhật nhanh chóng và ổn định.
- 84) CodeStar: Unified UI in one place manage.
- 85) Quicksight: machine learning, trực quan hóa dữ liệu business intelligent.
- 86) AWS System manager: cung cấp cho người dùng khả năng hiển thị và kiểm soát cơ sở hạ tầng trên AWS
- 87) OpsWorks: quản lý Chef & Puppet, sử dụng mã tự động cấu hình máy chủ.
- 88) Outpost: khách hàng truy cập cơ sở hạ tầng AWS, hybrid nhất quán.
- 89) Amazon Event Bridge: truy cập realtime những thay đổi trong dịch vụ AWS dưới dạng SaaS
- 90) AWS CloudTrail: ghi lại lệnh gọi API



### Experience (cont)

91) AWS Service Health Dashboard: hiển thị tình trạng chung của các dịch vụ AWS

92) NAT gateway: mạng private connect internet nhưng ngăn không cho internet kết nối đến Server đó.

93) NACL: lớp bảo mật như firewall kiểm soát ra vào của 1 hoặc nhiều subnet.

94) VPC Flow log: cho phép nắm bắt thông tin traffic đến và đi

95) AWS Private Link: là cách an toàn để kết nối VPC tới các dịch vụ AWS khác.

96) Forecast: dự báo chuỗi thời gian dựa trên máy học xây dựng phục vụ mục đích phân tích chỉ số kinh doanh

97) Artifact: Truy cập báo cáo trên thư và bảo mật.

98) GuardDuty: phát hiện mối đe dọa, intelligent protect

99) AWS Inspector: phát hiện lỗ hổng bảo mật tự động, phát hiện lỗ hổng bảo mật và khả năng xâm nhập qua mạng

100) AWS Security Hub: cảnh báo bảo mật ưu tiên cao và trạng thái tuân thủ trên các tài khoản AWS.

101) AWS Step Function: luồng công việc cho Lambda

102) AWS Pinpoint: marketing

103) Direct connect

104) Transit gateway

105) AWS Detective: root cause



By tronghao

[cheatography.com/tronghao/](https://cheatography.com/tronghao/)

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