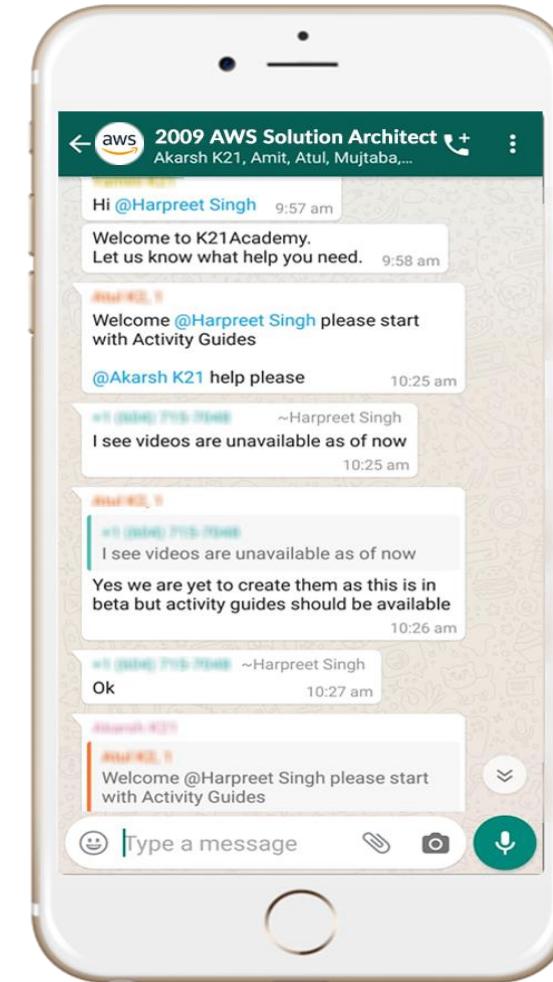


Introduction to AWS



Getting Help

support@k21academy.com



Making Best of Your Training

- Live Interactive Session
 - **FREE Unlimited Retake** for Next 1 Years
 - **FREE On-Job Support** for next 1 Years
 - Ask Questions & Make Session Interactive
 - Add Yourself in WhatsApp Group
 - Live Session Details <http://k21academy.com/live>
- Ask as Many Questions as you can & make session interactive
- Do Lots of Hands-On
- Learn at your own Pace & Look How Far You have come
- Share your WIN as it will inspire others



AWS SAA-C02

Module Agenda

Module Agenda

- Cloud Computing Overview
- Cloud Service Models: IaaS, PaaS, SaaS
- Cloud Deployment Model: Public, Private, Hybrid
- AWS Global Infrastructure: Region, Availability Zones
- AWS Services Overview
- Core Services: IAM, Compute/VM, Storage, Network, Database
- Automation & Config: Cloud Formation, OpsWorks
- Audit & Monitoring: CloudWatch, CloudTrail
- Application Services: SNS, SES, SQS, SWF
- AWS DevOps Tools: CodeCommit, CodeBuild, CodeDeploy, CodePipeline
- AWS Architecture Overview
- How To Access Service

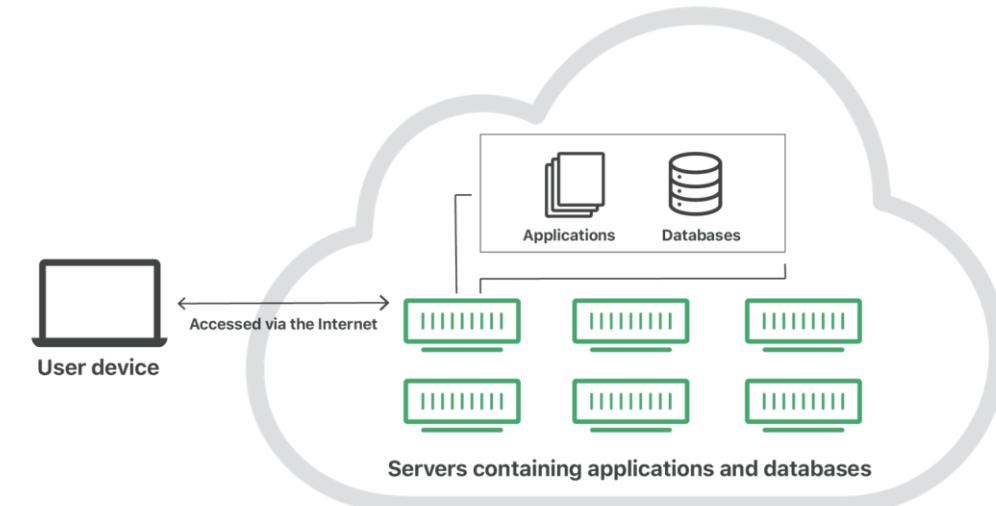


Overview Cloud Computing

What Is Cloud Computing

- Cloud computing is the delivery of computing services: servers, storage, databases, networking, tools and software over the Internet.

- Cloud computing enables companies to consume a compute resource, such as a servers, storage or an application, as a utility like water or electricity, rather than having to build and maintain computing infrastructures in house.

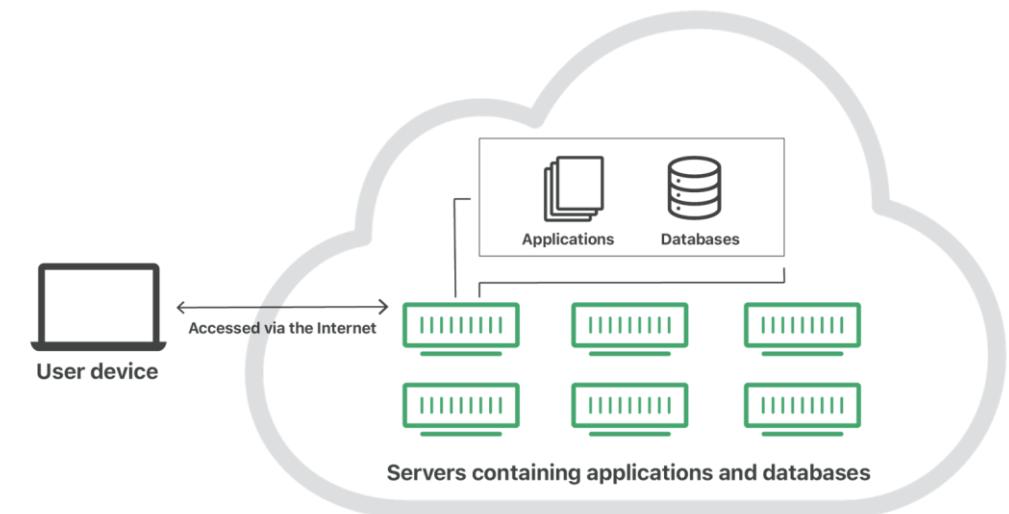


Cloud Computing Definition

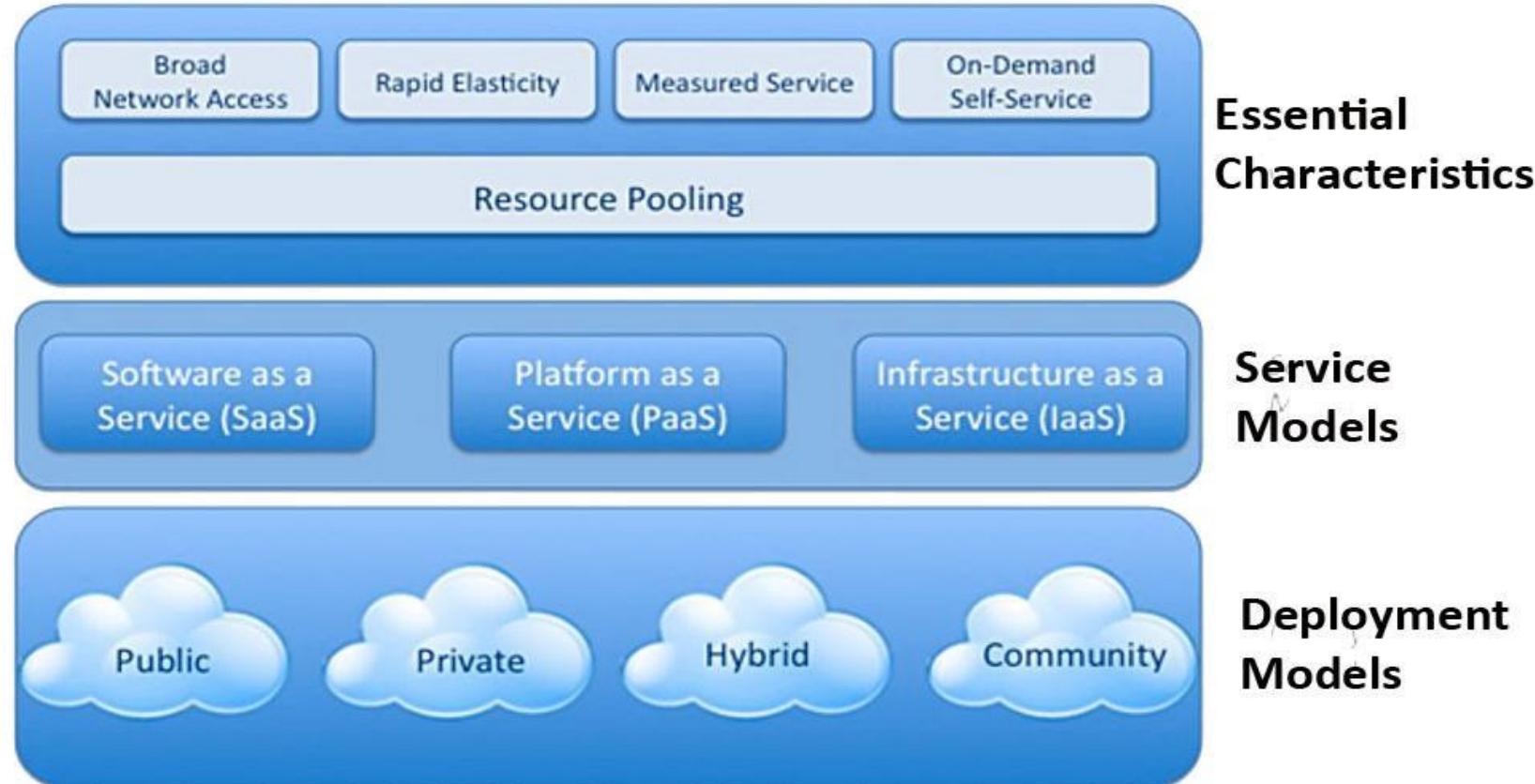
Cloud computing is a model for enabling **convenient, on-demand** network access to a **shared pool** of configurable computing resources (e.g., networks, servers, storage, applications, and services) that can be rapidly provisioned and released with minimal management effort or service provider interaction.

This cloud model is composed of

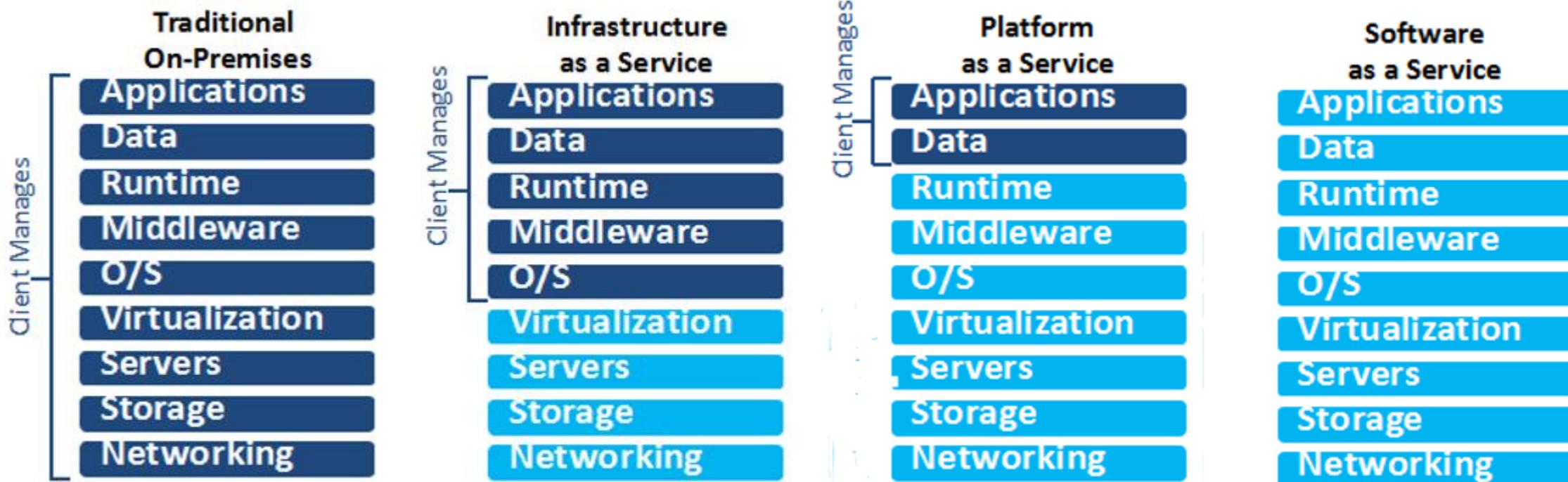
- Five essential characteristics
- Three service models
- Four deployment models.



Cloud Computing Definition



Cloud Service Model



Cloud Deployment Model



PUBLIC CLOUD

- Offered by third-party providers
- Available to anyone over the public internet
- Scales quickly and convenient



HYBRID CLOUD

- Combination of both public & private cloud
- Shared security responsibility
- Helps maintain tighter controls over sensitive data & processes



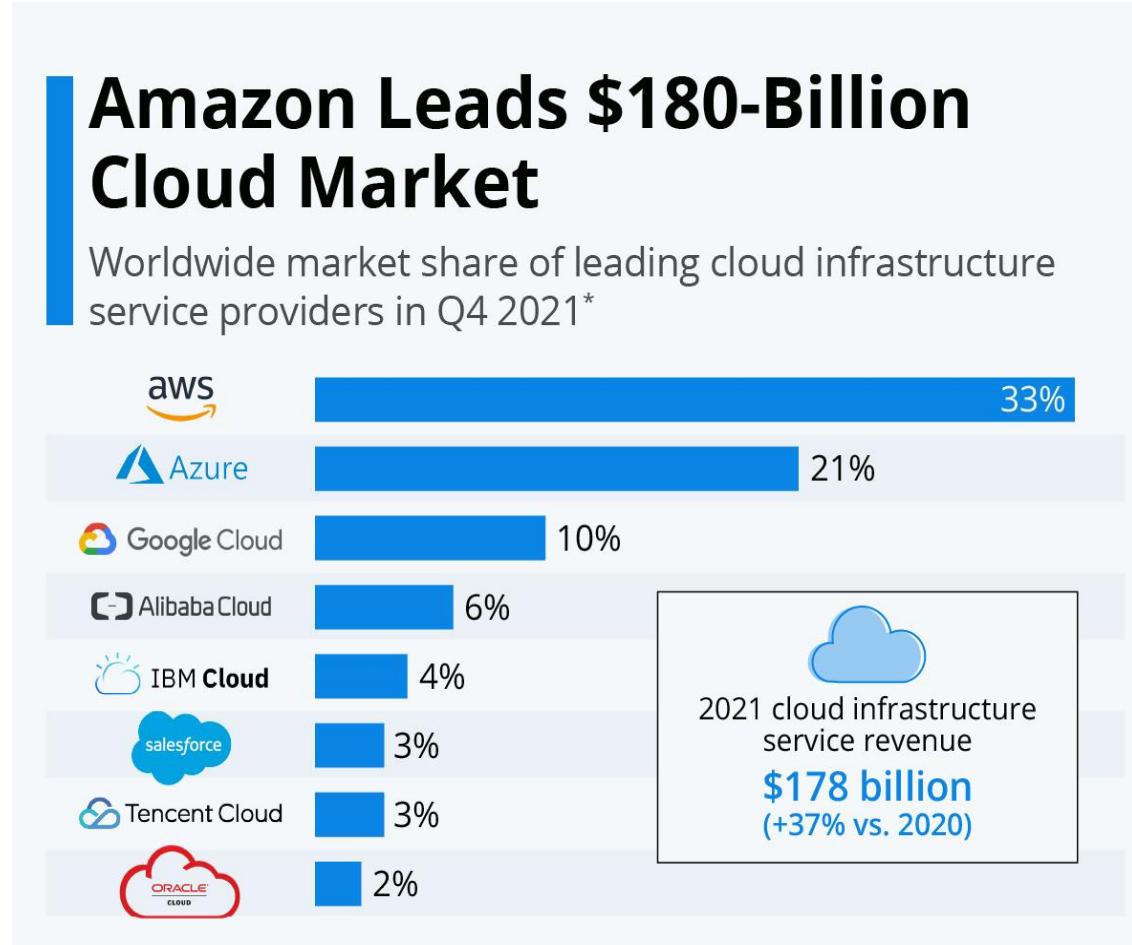
PRIVATE CLOUD

- Offered to select users over the internet or a private internal network
- Provides greater security controls
- Requires traditional data center staffing & maintenance



Introduction To AWS

Market Survey Of AWS

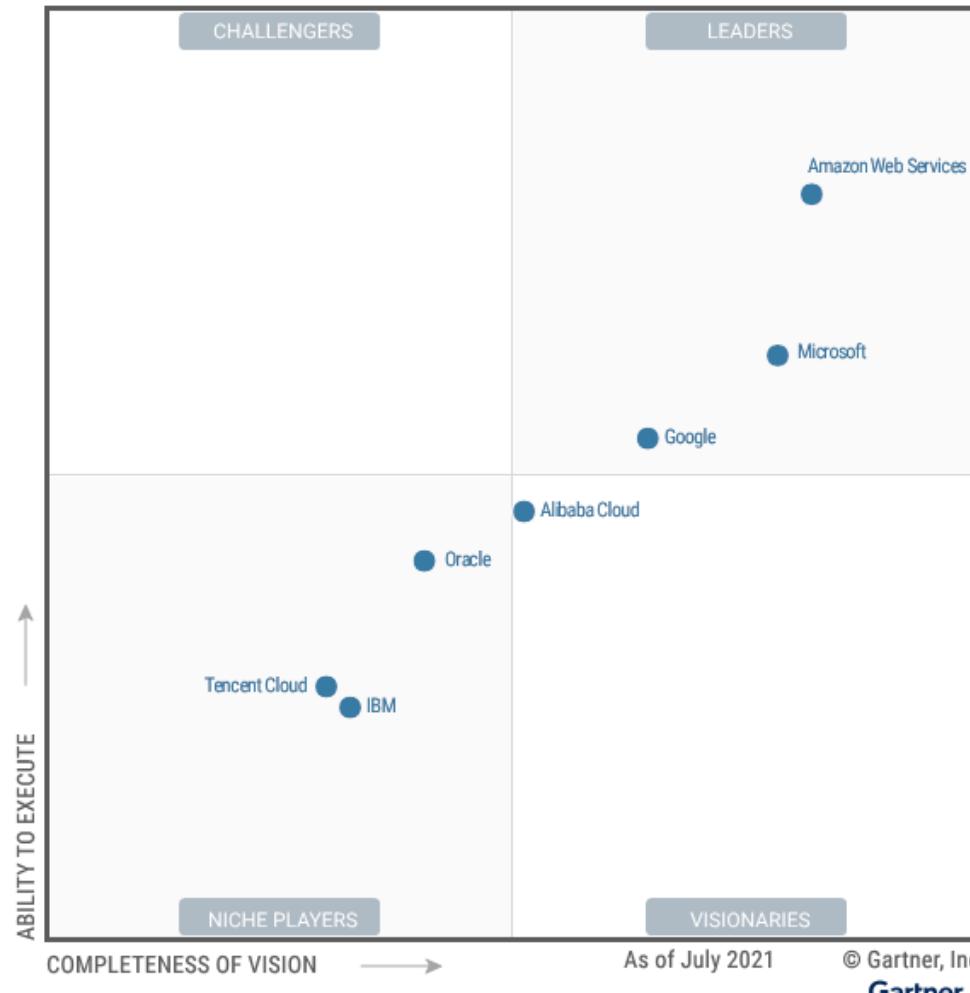


Services: AWS, Azure & GCP

Amazon AWS	Microsoft Azure	GCP
S3	Blob Storage	Storage
EC2	Virtual Machines	Compute Engine
EC2 Container Service	Container Service	Kubernetes Engine
Elastic Beanstalk	Azure App service	App Engine
DynamoDB	Cosmos DB	Cloud Datastore
RDS	SQL Database	BigQuery
Lambda	Azure Functions	Cloud Functions

Why AWS

- Gartner August' 20 magic quadrant for Cloud Infra, AWS is the leader in the Cloud Computing market.
- Gartner says, AWS is the most mature, enterprise-ready provider, with the deepest capabilities for governing a large number of users and resources.
- AWS dominates the public cloud market with a 47.1% market share.
- AWS is the most popular public cloud infra platform, comprising 41.5% of workloads.
- AWS certification is fast becoming the must have certificates for any IT professional working with Cloud.



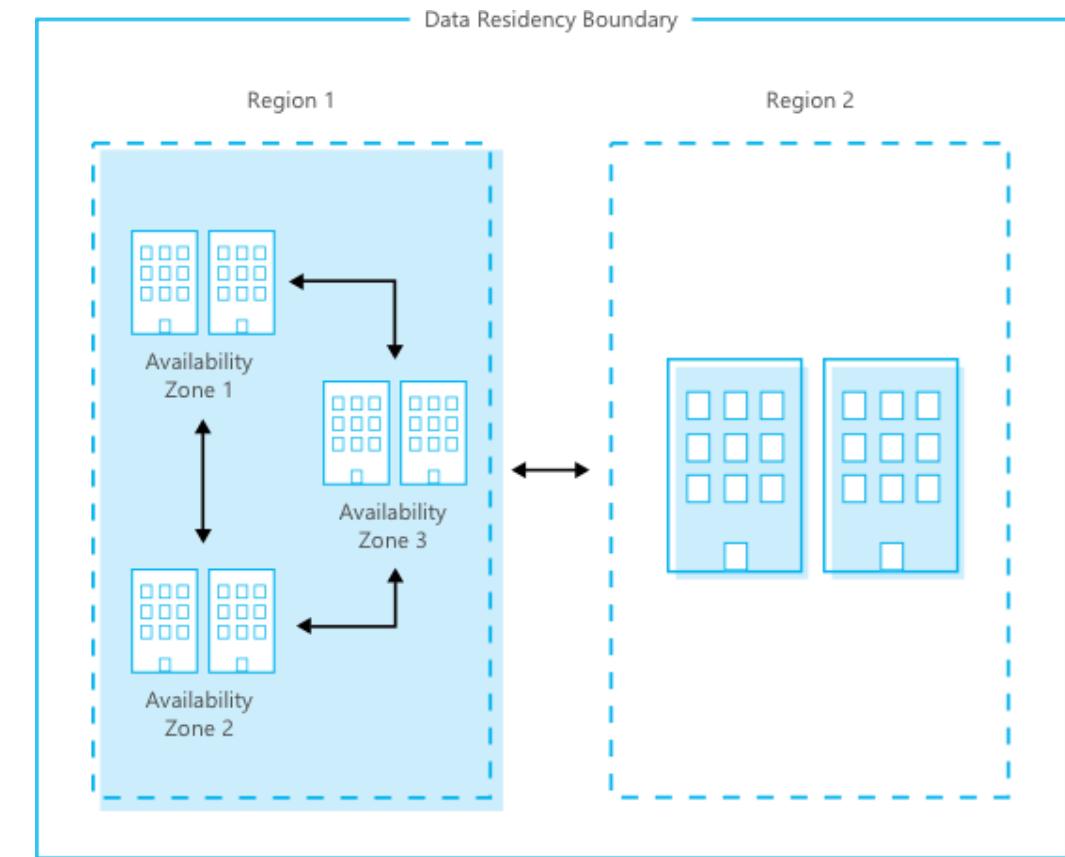


Global Infrastructure

AWS Global Infrastructure

AWS Global Infrastructure Consists of:

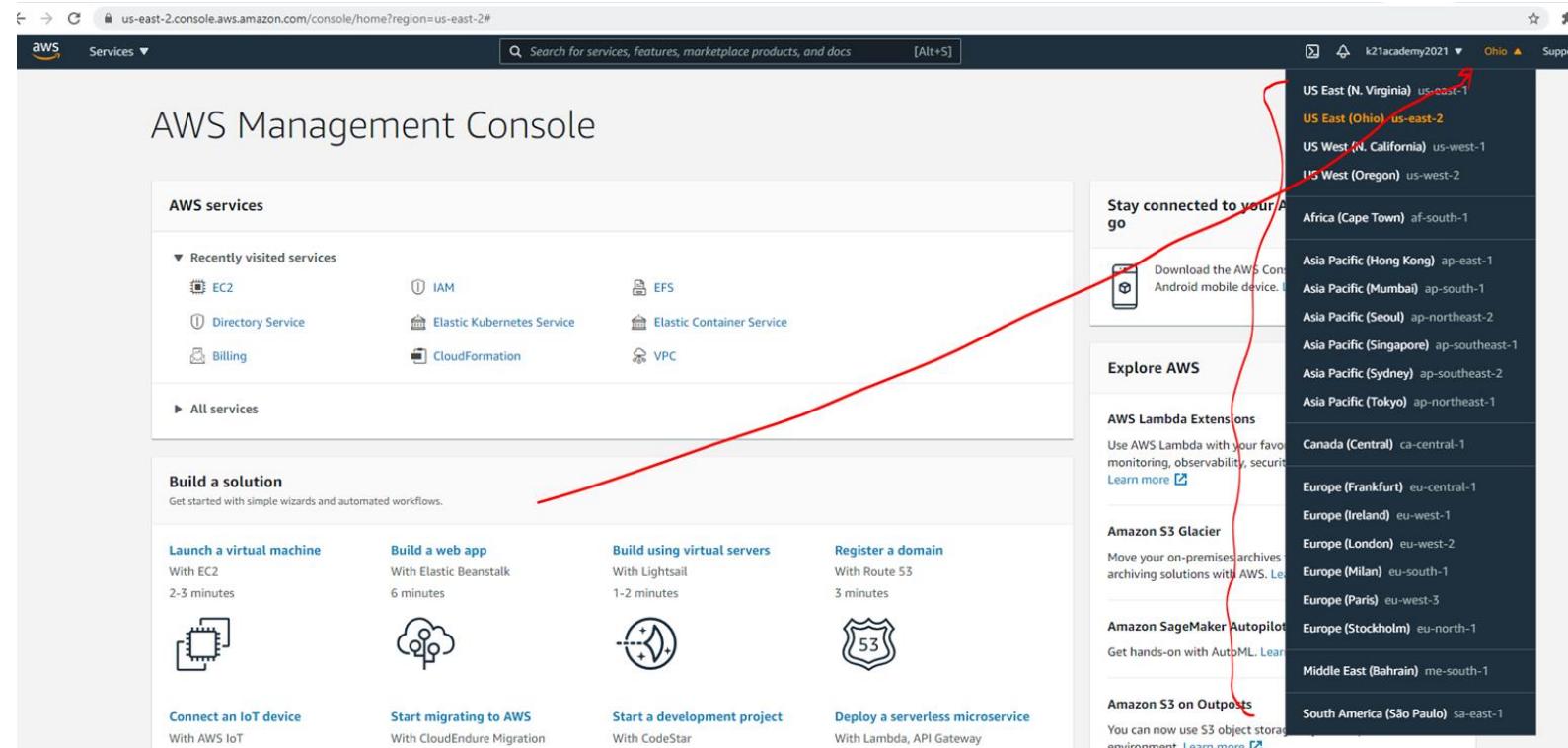
- Regions
- &
- Availability Zones



AWS Region



Choosing Region

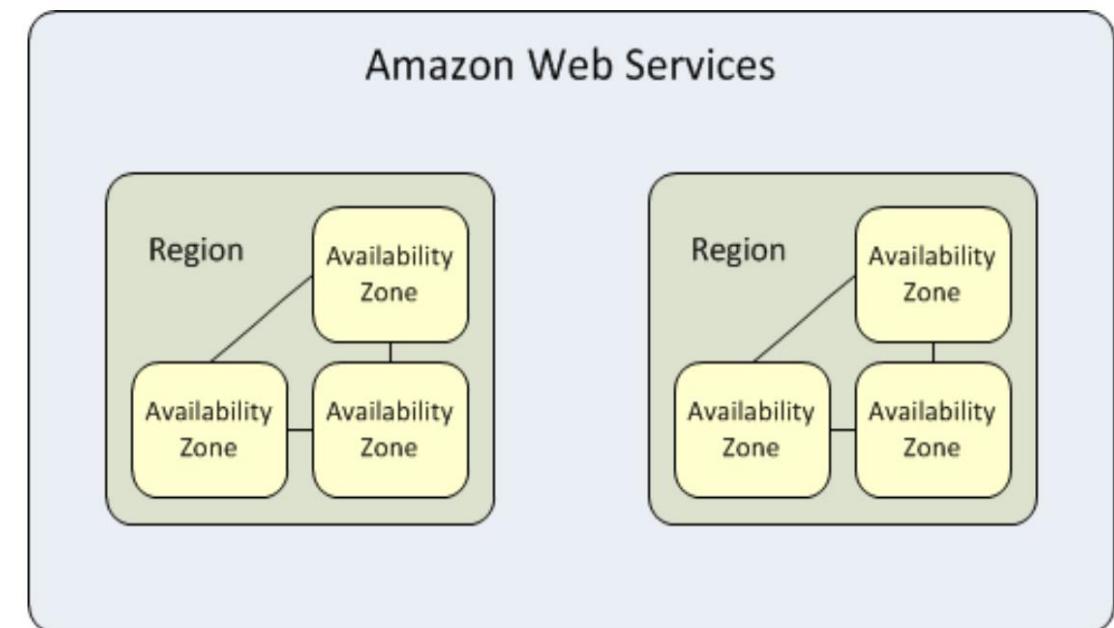
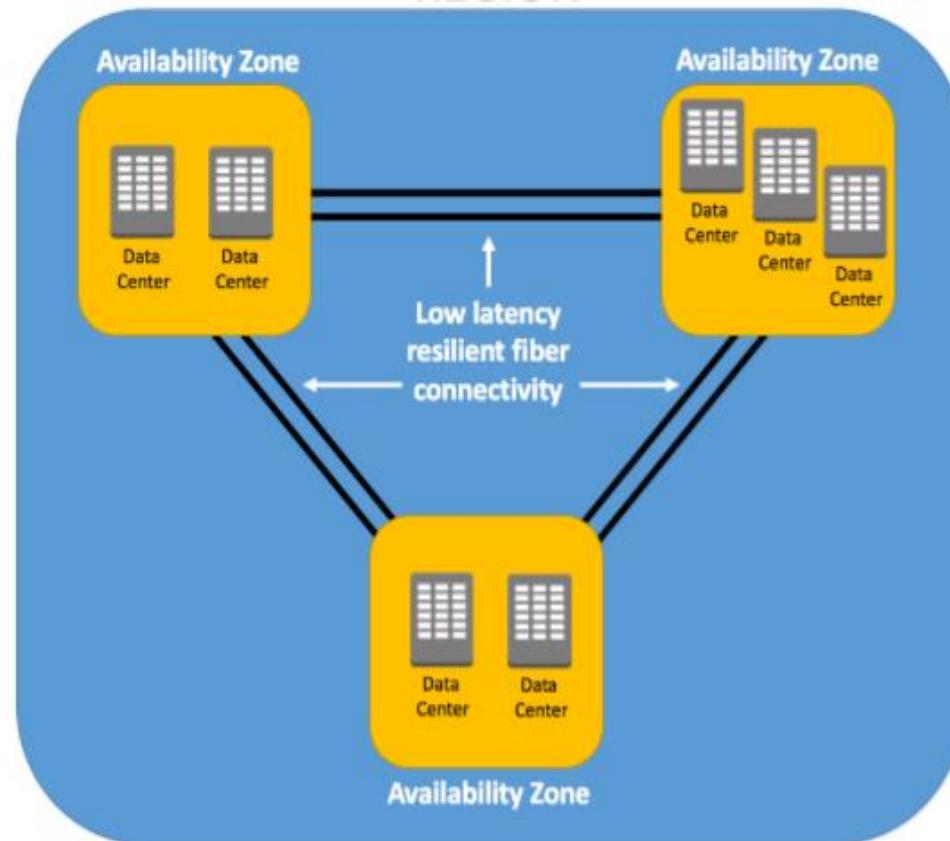



AWS Management Console

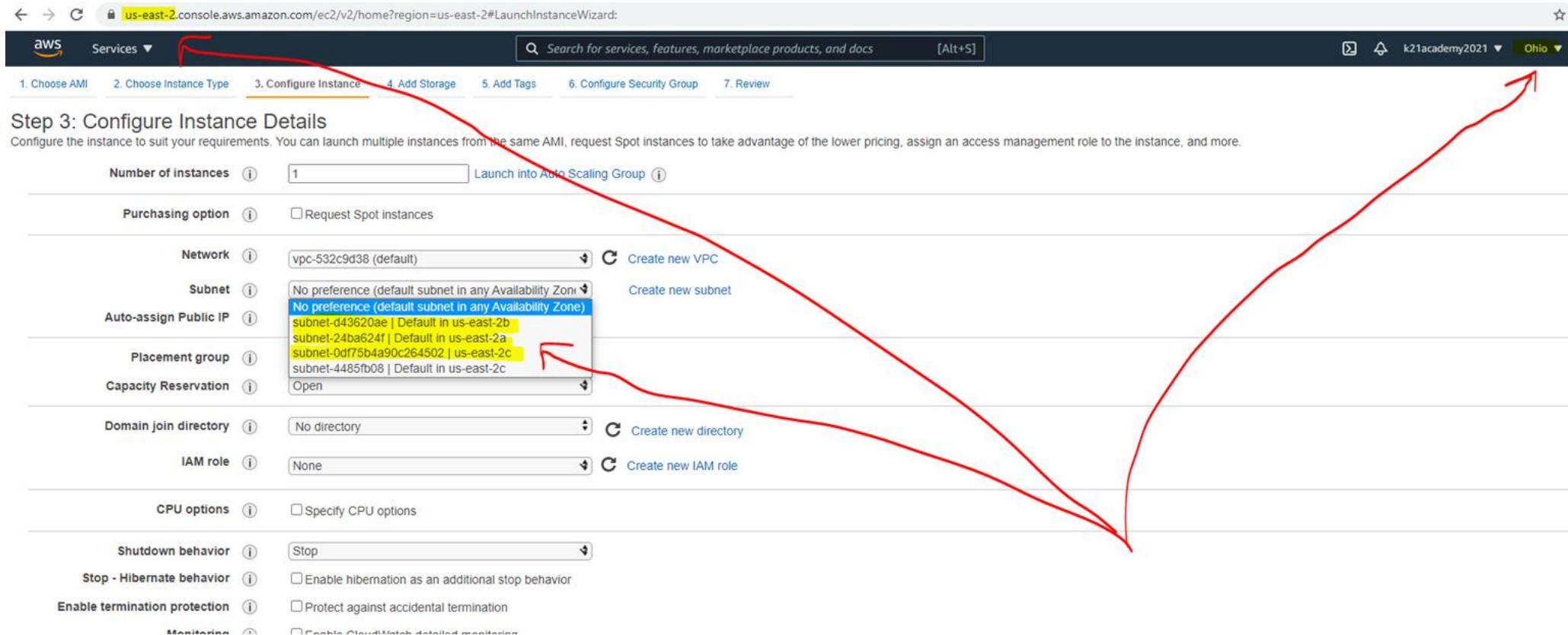
Screenshot of the AWS Management Console interface. A red arrow points from the top navigation bar to the 'Region' dropdown menu on the right side of the screen. The dropdown menu lists various AWS regions:

- US East (N. Virginia) us-east-1
- US East (Ohio) us-east-2
- US West (N. California) us-west-1
- US West (Oregon) us-west-2
- Africa (Cape Town) af-south-1
- Asia Pacific (Hong Kong) ap-east-1
- Asia Pacific (Mumbai) ap-south-1
- Asia Pacific (Seoul) ap-northeast-2
- Asia Pacific (Singapore) ap-southeast-1
- Asia Pacific (Sydney) ap-southeast-2
- Asia Pacific (Tokyo) ap-northeast-1
- Canada (Central) ca-central-1
- Europe (Frankfurt) eu-central-1
- Europe (Ireland) eu-west-1
- Europe (London) eu-west-2
- Europe (Milan) eu-south-1
- Europe (Paris) eu-west-3
- Europe (Stockholm) eu-north-1
- Middle East (Bahrain) me-south-1
- South America (São Paulo) sa-east-1

AWS Zones



Choosing Zone



us-east-2.console.aws.amazon.com/ec2/v2/home?region=us-east-2#LaunchInstanceWizard:

1. Choose AMI 2. Choose Instance Type 3. Configure Instance 4. Add Storage 5. Add Tags 6. Configure Security Group 7. Review

Step 3: Configure Instance Details

Configure the instance to suit your requirements. You can launch multiple instances from the same AMI, request Spot instances to take advantage of the lower pricing, assign an access management role to the instance, and more.

Number of instances	<input type="text" value="1"/> Launch into Auto Scaling Group
Purchasing option	<input type="checkbox"/> Request Spot instances
Network	vpc-532c9d38 (default)
Subnet	No preference (default subnet in any Availability Zone) <ul style="list-style-type: none"> subnet-043620ae Default in us-east-2b subnet-24ba624f Default in us-east-2a subnet-0df75b4a90c264502 us-east-2c subnet-4485fb08 Default in us-east-2c
Auto-assign Public IP	<input checked="" type="checkbox"/> No preference (default subnet in any Availability Zone)
Placement group	<input type="checkbox"/> Create new placement group
Capacity Reservation	<input type="checkbox"/> Open
Domain join directory	<input type="checkbox"/> No directory
IAM role	<input type="checkbox"/> None
CPU options	<input type="checkbox"/> Specify CPU options
Shutdown behavior	<input type="checkbox"/> Stop
Stop - Hibernate behavior	<input type="checkbox"/> Enable hibernation as an additional stop behavior
Enable termination protection	<input type="checkbox"/> Protect against accidental termination
Monitoring	<input type="checkbox"/> Enable detailed monitoring

AWS Global Infrastructure

With millions of active customers and tens of thousands of partners globally, AWS has the largest and most dynamic ecosystem. Customers across virtually every industry and of every size, including start-ups, enterprises, and public sector organizations, are running every imaginable use case on AWS.

26 Launched Regions

Each with multiple Availability Zones (AZ's)

84 Availability Zones

17 Local Zones

24 Wavelength Zones

For ultralow latency applications

8 Announced Regions

30 Announced Local Zones

2x More Regions

With multiple AZ's than the next largest cloud provider

245 Countries and Territories Served

108 Direct Connect Locations

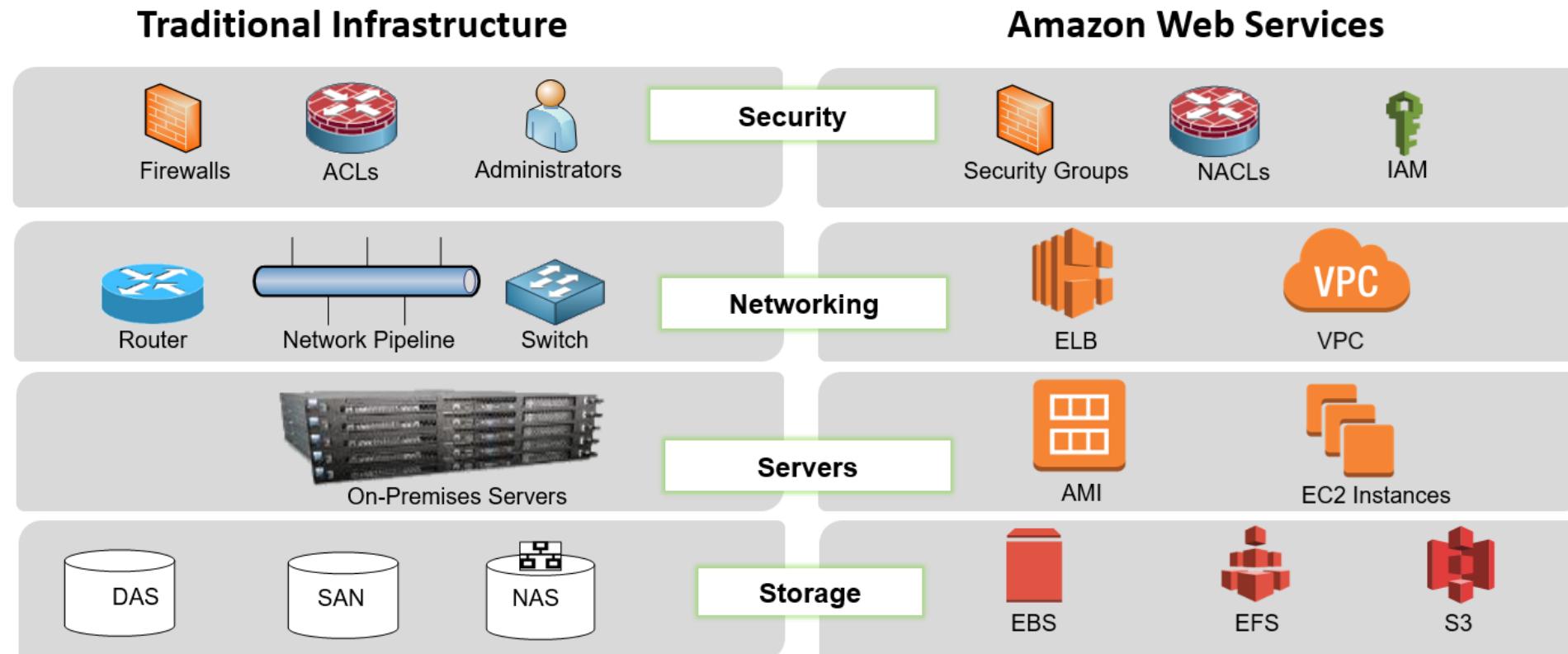
310+ Points of Presence

300+ Edge Locations and 13 Regional Edge Caches

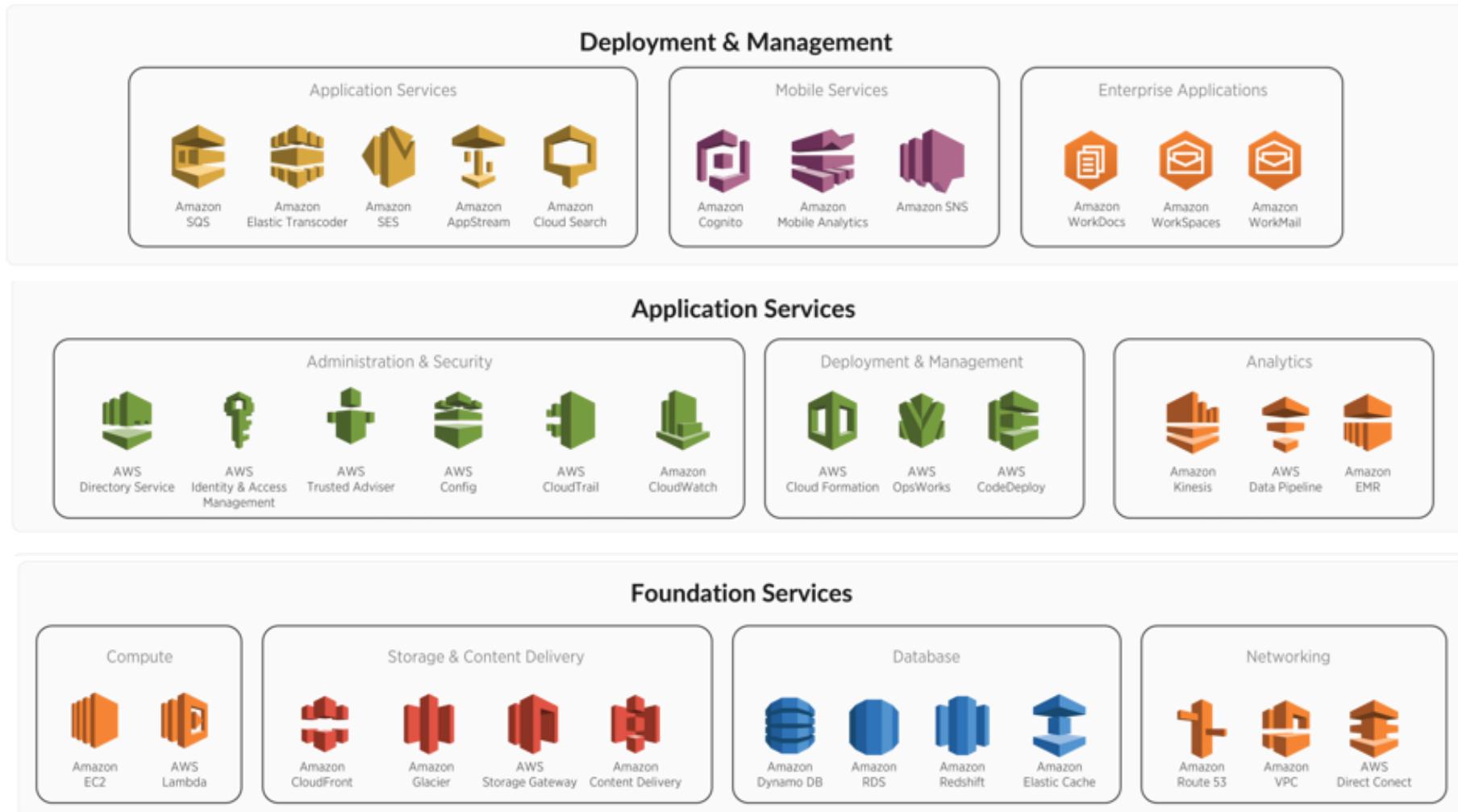


AWS Services

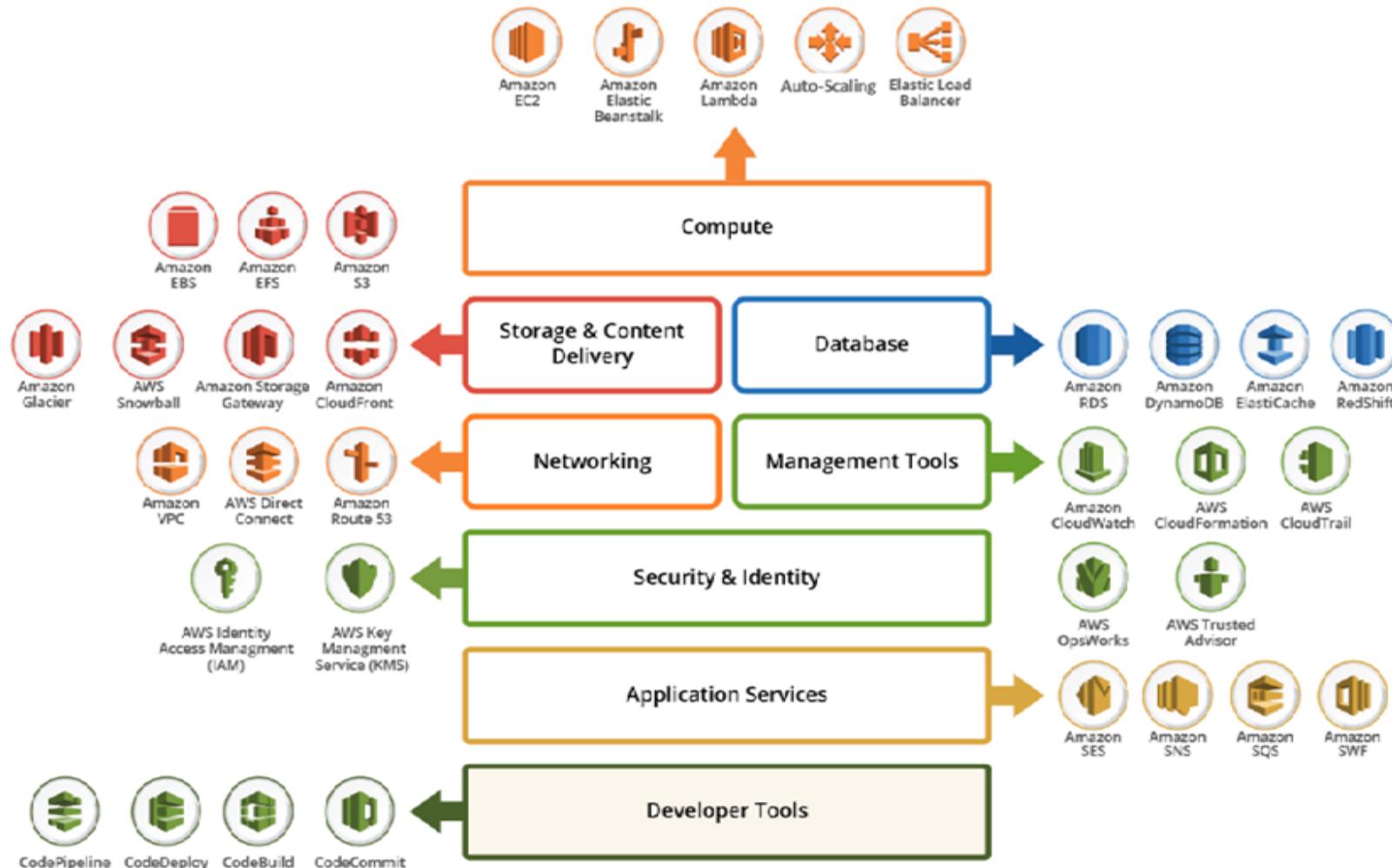
Traditional vs AWS



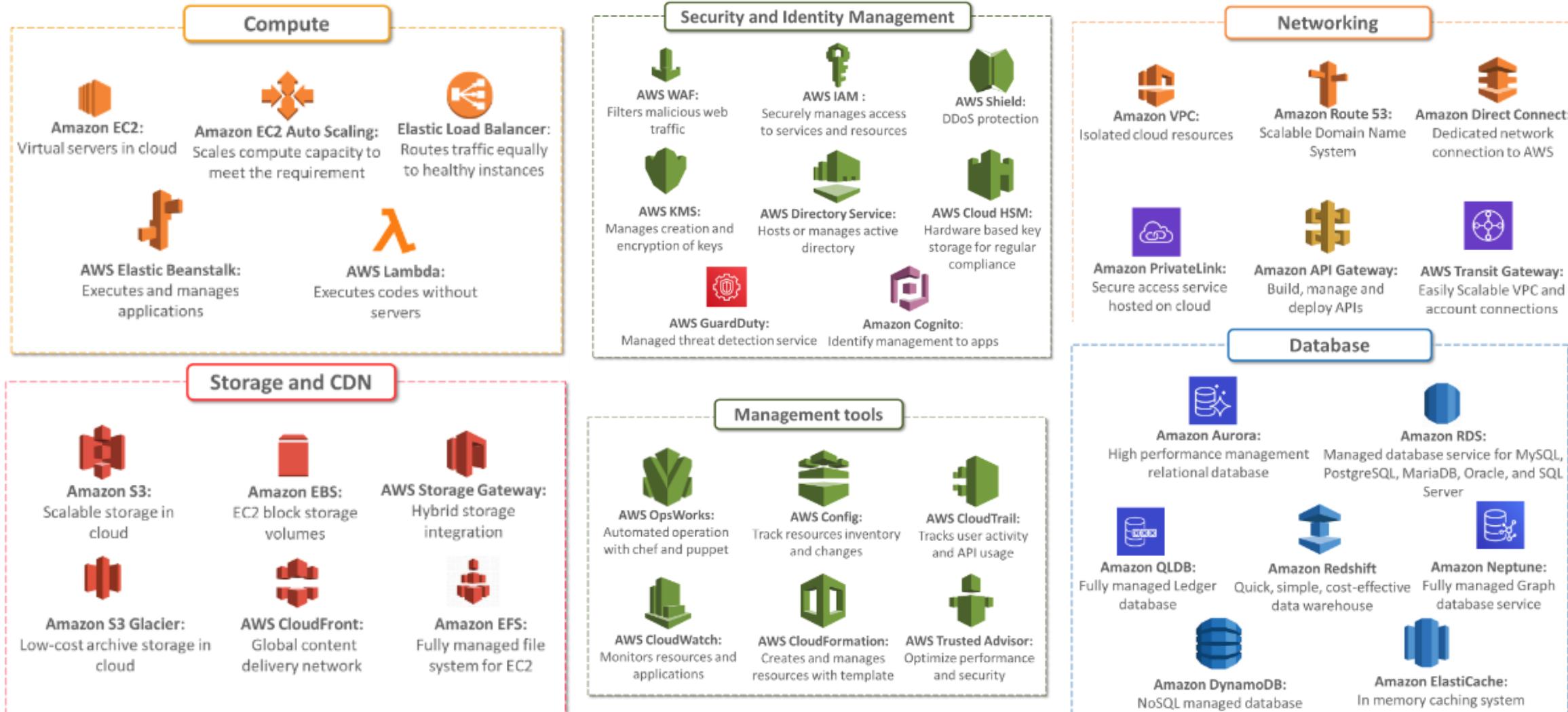
AWS Services



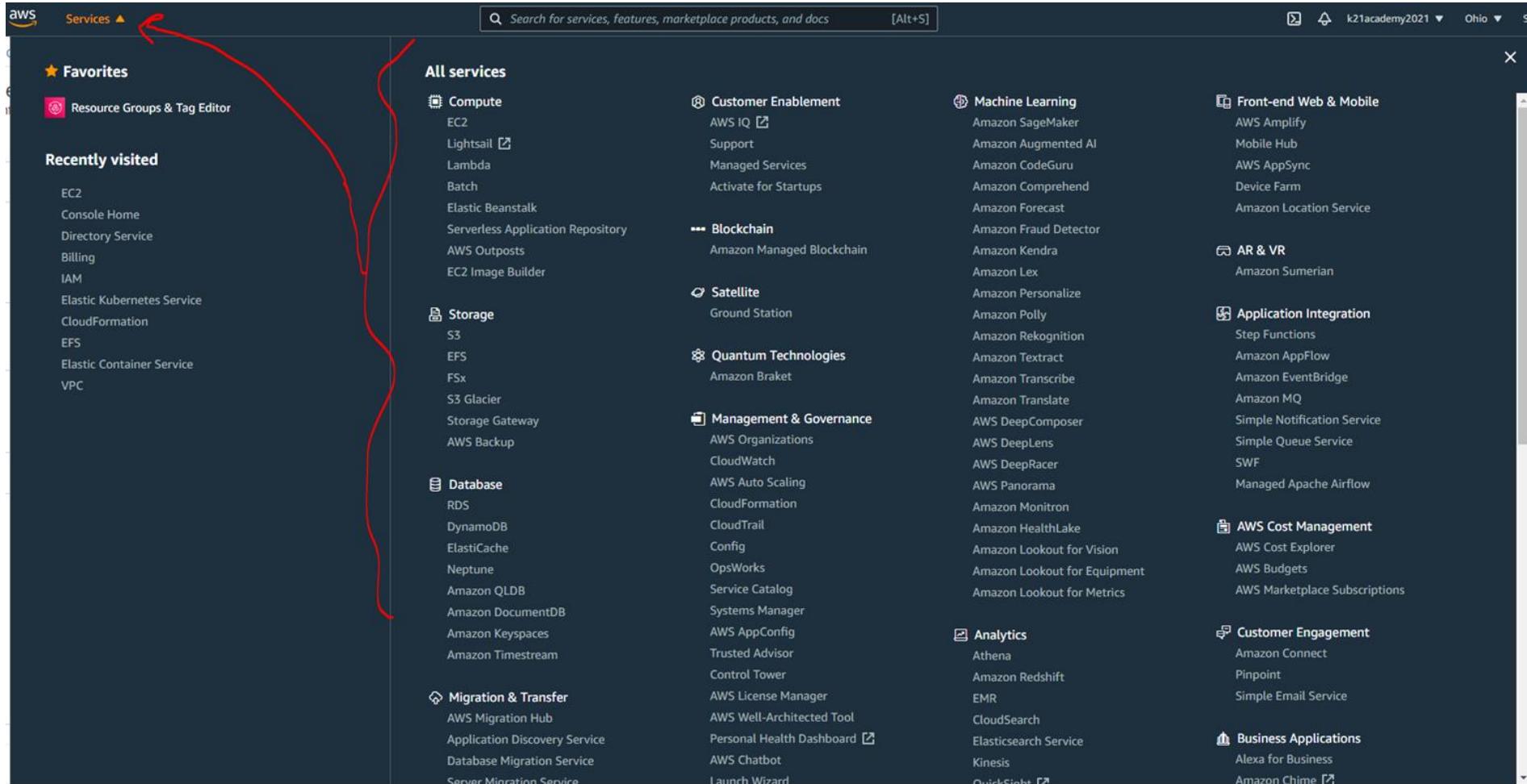
AWS Services



AWS Services



AWS Services

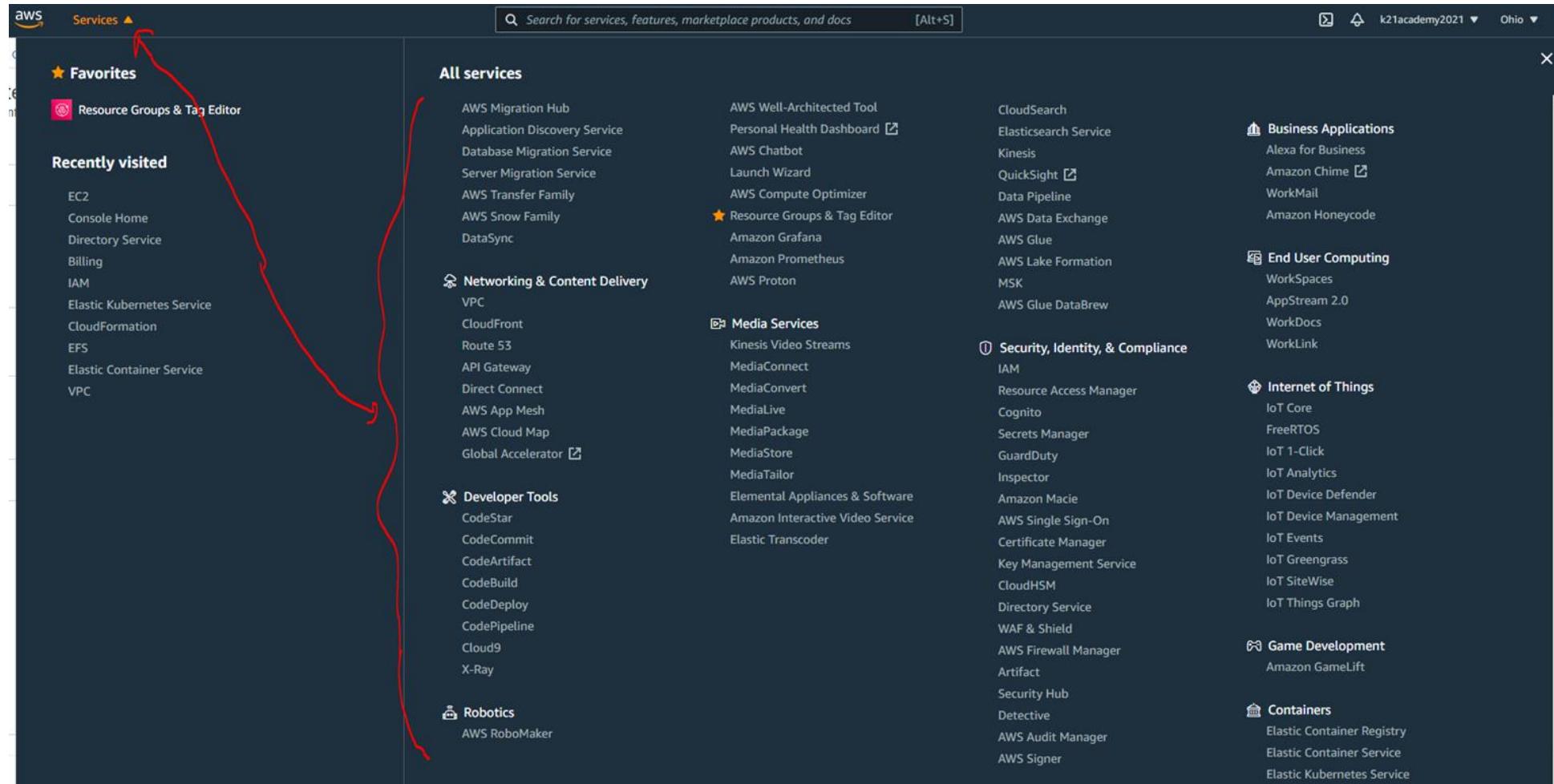


The screenshot shows the AWS Services Catalog interface. At the top left is the AWS logo and a "Services" dropdown menu. A red arrow points to the "Services" dropdown. To its right is a search bar with placeholder text "Search for services, features, marketplace products, and docs" and a keyboard shortcut "[Alt+S]". On the far right are user profile icons and dropdown menus for "k21academy2021", "Ohio", and "Su".

The main content area is titled "All services" and is organized into several sections:

- Favorites**: Resource Groups & Tag Editor
- Recently visited**: EC2, Console Home, Directory Service, Billing, IAM, Elastic Kubernetes Service, CloudFormation, EFS, Elastic Container Service, VPC.
- All services** (with a dropdown arrow):
 - Compute**: EC2, Lightsail, Lambda, Batch, Elastic Beanstalk, Serverless Application Repository, AWS Outposts, EC2 Image Builder.
 - Storage**: S3, EFS, FSx, S3 Glacier, Storage Gateway, AWS Backup.
 - Database**: RDS, DynamoDB, ElastiCache, Neptune, Amazon QLDB, Amazon DocumentDB, Amazon Keyspaces, Amazon Timestream.
 - Migration & Transfer**: AWS Migration Hub, Application Discovery Service, Database Migration Service, Server Migration Service.
- Customer Enablement**: AWS IQ, Support, Managed Services, Activate for Startups.
- Machine Learning**: Amazon SageMaker, Amazon Augmented AI, Amazon CodeGuru, Amazon Comprehend, Amazon Forecast, Amazon Fraud Detector, Amazon Kendra, Amazon Lex, Amazon Personalize, Amazon Polly, Amazon Rekognition, Amazon Texttract, Amazon Transcribe.
- Front-end Web & Mobile**: AWS Amplify, Mobile Hub, AWS AppSync, Device Farm, Amazon Location Service.
- Blockchain**: Amazon Managed Blockchain.
- Satellite**: Ground Station.
- Quantum Technologies**: Amazon Braket.
- Management & Governance**: AWS Organizations, CloudWatch, AWS Auto Scaling, CloudFormation, CloudTrail, Config, OpsWorks, Service Catalog, Systems Manager.
- Analytics**: AWS AppConfig, Trusted Advisor, Control Tower, AWS License Manager, AWS Well-Architected Tool, Personal Health Dashboard, AWS Chatbot, Launch Wizard.
- AR & VR**: Amazon Sumerian.
- Application Integration**: Step Functions, Amazon AppFlow, Amazon EventBridge, Amazon MQ, Simple Notification Service, Simple Queue Service, SWF, Managed Apache Airflow.
- AWS Cost Management**: AWS Cost Explorer, AWS Budgets, AWS Marketplace Subscriptions.
- Customer Engagement**: Amazon Connect, Pinpoint, Simple Email Service.
- Business Applications**: Alexa for Business, Amazon Chime.

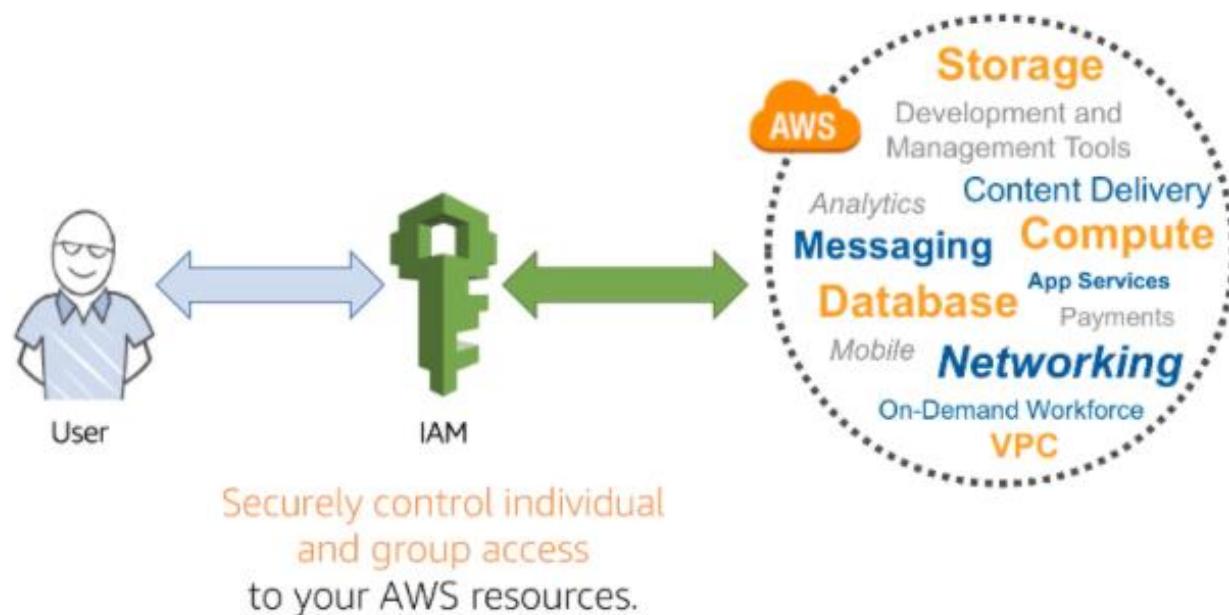
AWS Services





IAM Service

IAM Service



The screenshot shows the AWS IAM service dashboard. The left sidebar lists "Access management" options: Groups, Users, Roles, Policies, Identity providers, Account settings, Access reports, Access analyzer, Archive rules, Analyzers, Settings, Credential report, Organization activity, and Service control policies (SCPs). The "Roles" option is highlighted with a yellow box and has three red arrows pointing to it from the top right. The main content area is titled "Your Security Credentials" and contains sections for Password, Multi-factor authentication (MFA), and Access keys (access key ID and secret access key). A yellow box highlights the "Access keys" section. Below it, a table shows two access keys: one created on Nov 16th 2020 with Key ID AKIAJAUJCDIJHVP6BQAS and another on Nov 20th 2020 with Key ID AKIAI5CZ3CVXQEBVPMP. A blue button labeled "Create New Access Key" is visible. At the bottom, a note says "Root user access keys provide unrestricted access to your entire AWS account. More..." and a section for CloudFront key pairs, X.509 certificate, and Account identifiers.

Identity and Access Management (IAM)

Dashboard

Access management

- Groups
- Users
- Roles**
- Policies

Identity providers

Account settings

Access reports

Access analyzer

Archive rules

Analyzers

Settings

Credential report

Organization activity

Service control policies (SCPs)

Search IAM

Your Security Credentials

Use this page to manage the credentials for your AWS account. To manage...

To learn more about the types of AWS credentials and how they're used, see...

▲ Password

▲ Multi-factor authentication (MFA)

▼ Access keys (access key ID and secret access key)

Use access keys to make programmatic calls to AWS from the AWS CLI

Created	Access Key ID
Nov 16th 2020	AKIAJAUJCDIJHVP6BQAS
Nov 20th 2020	AKIAI5CZ3CVXQEBVPMP

Create New Access Key

Root user access keys provide unrestricted access to your entire AWS account. More...

▲ CloudFront key pairs

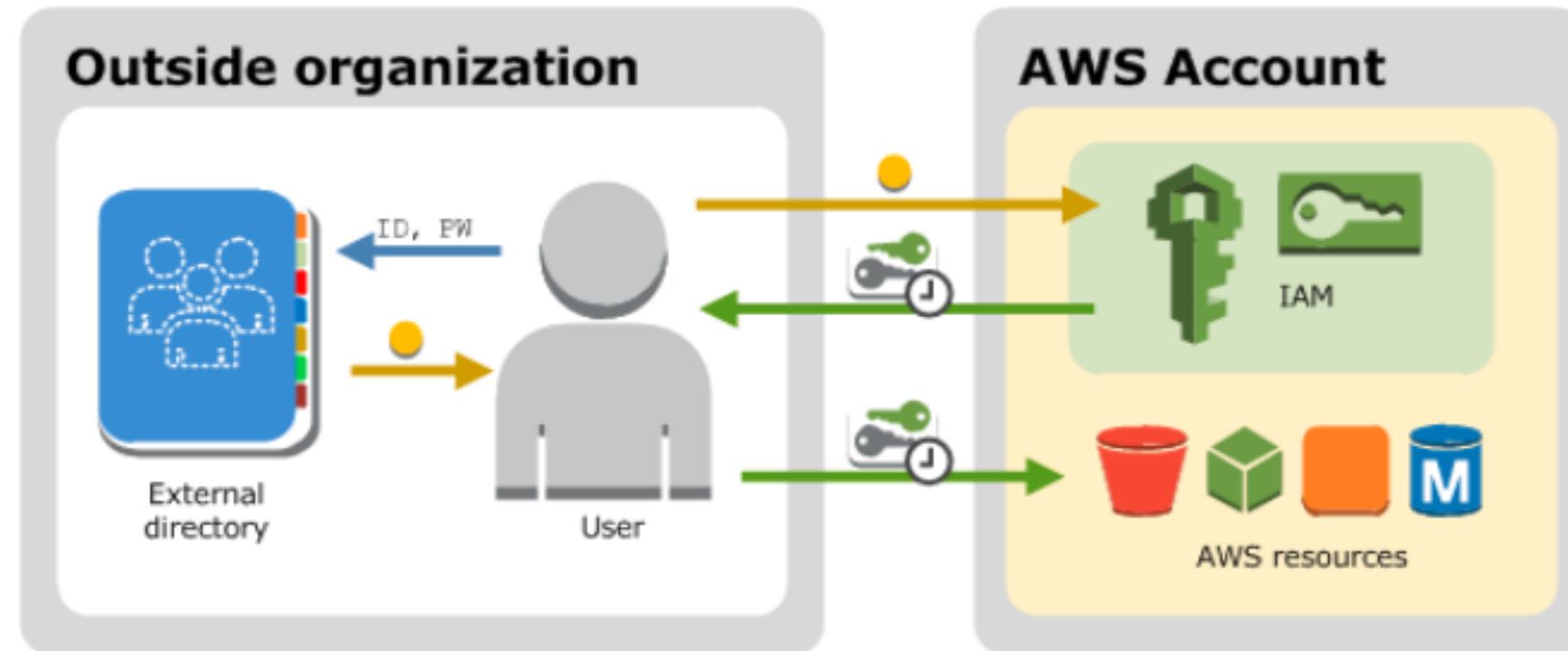
▲ X.509 certificate

▲ Account identifiers

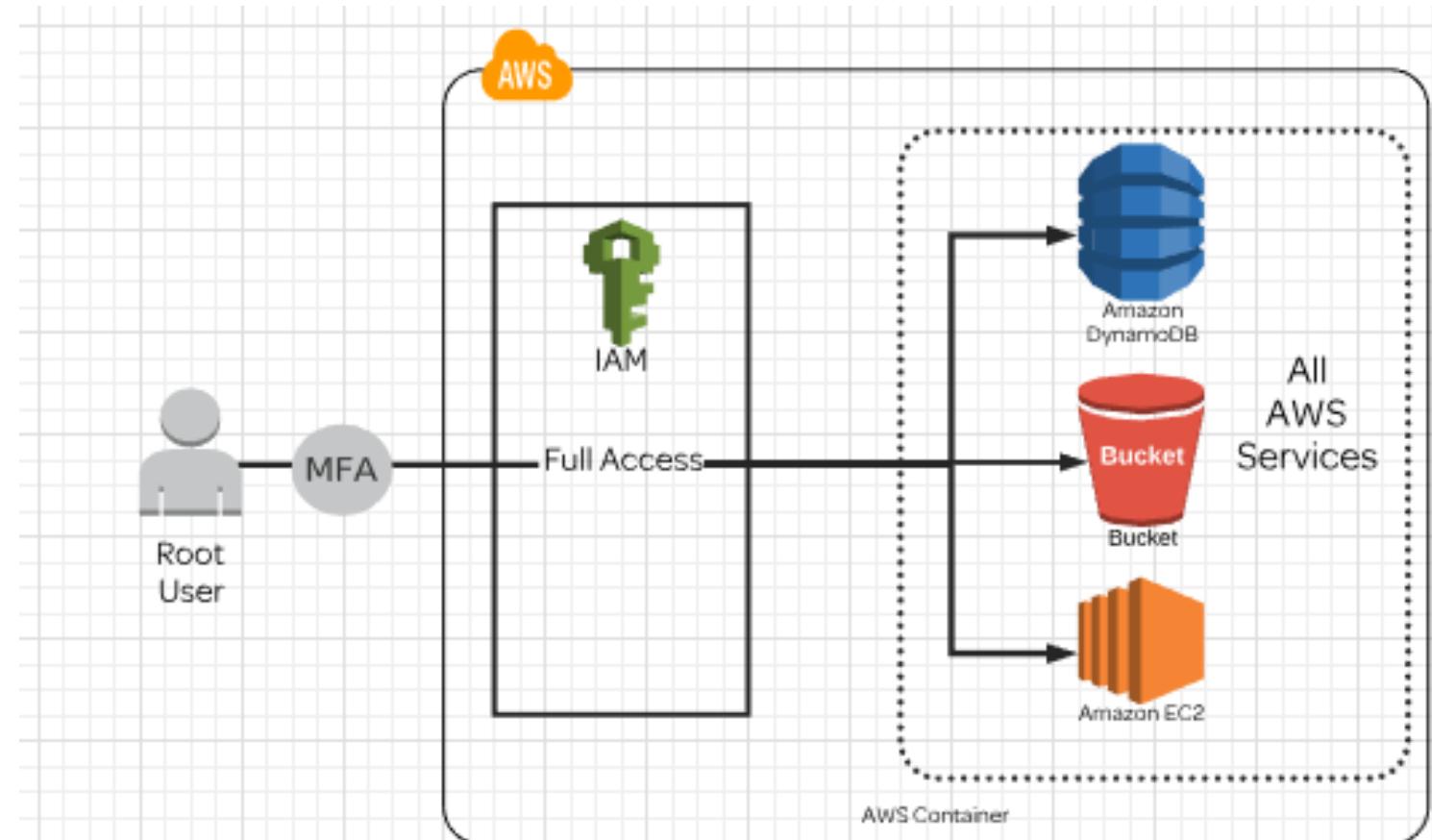
IAM Users, Group, Policy, Role



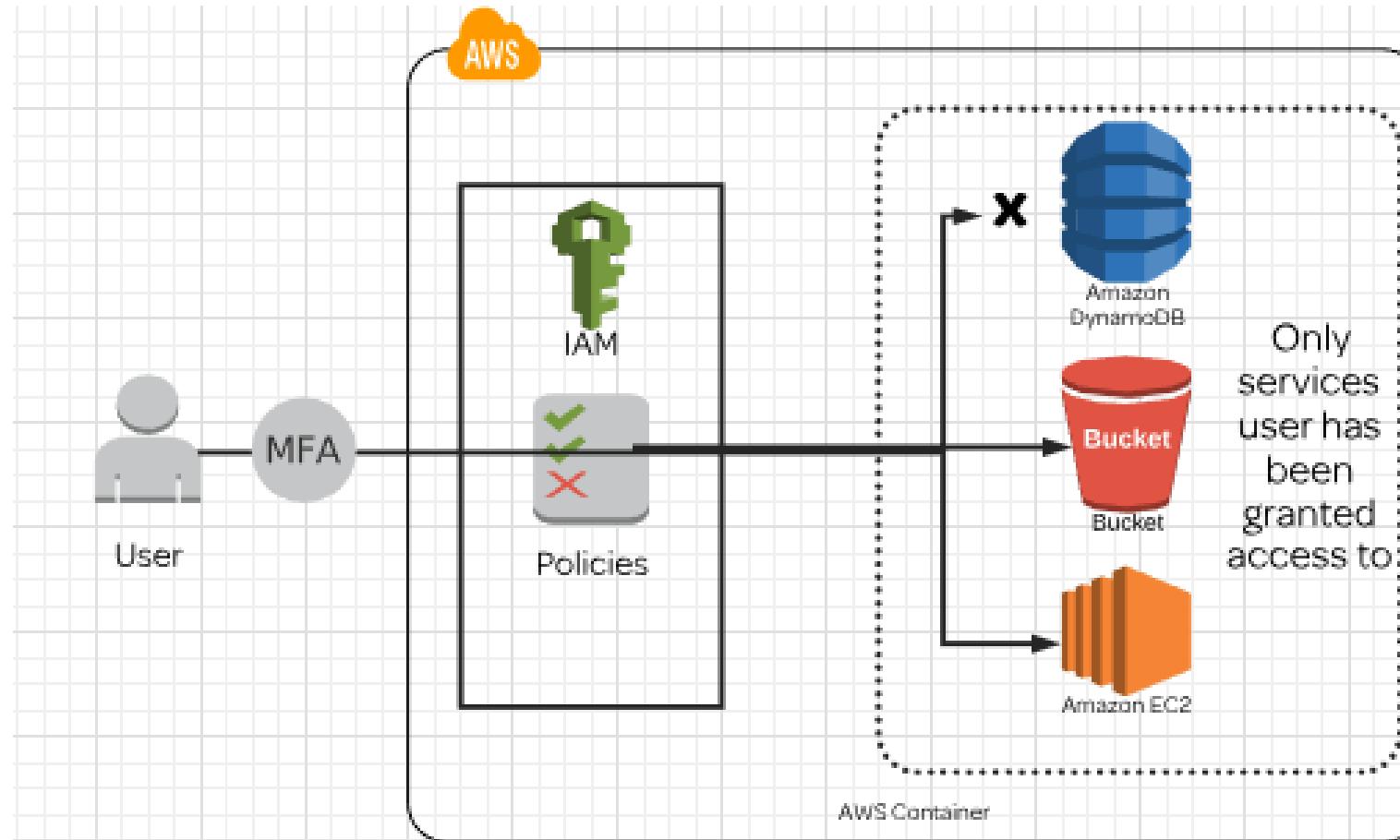
AWS Users



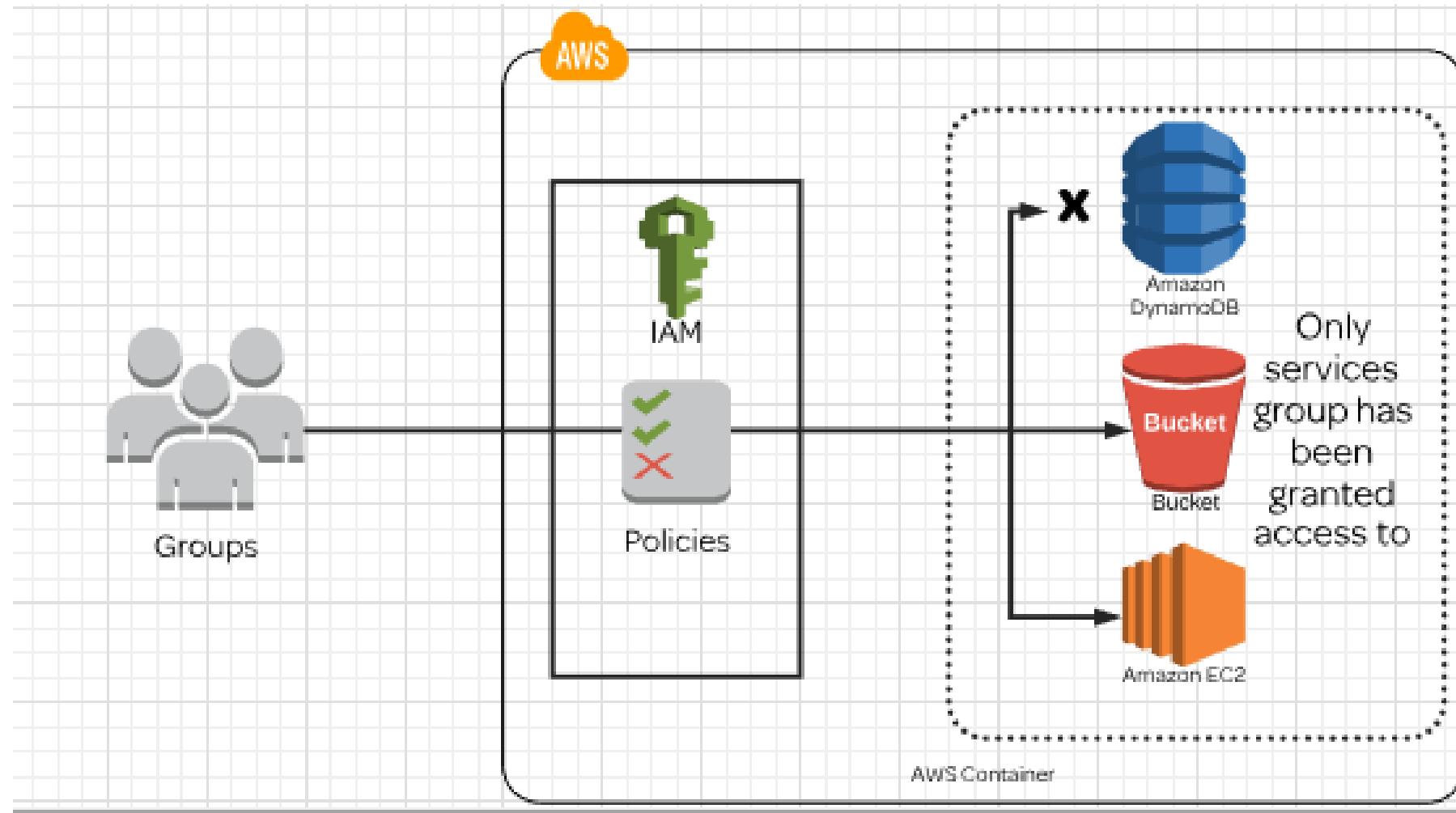
Root USER



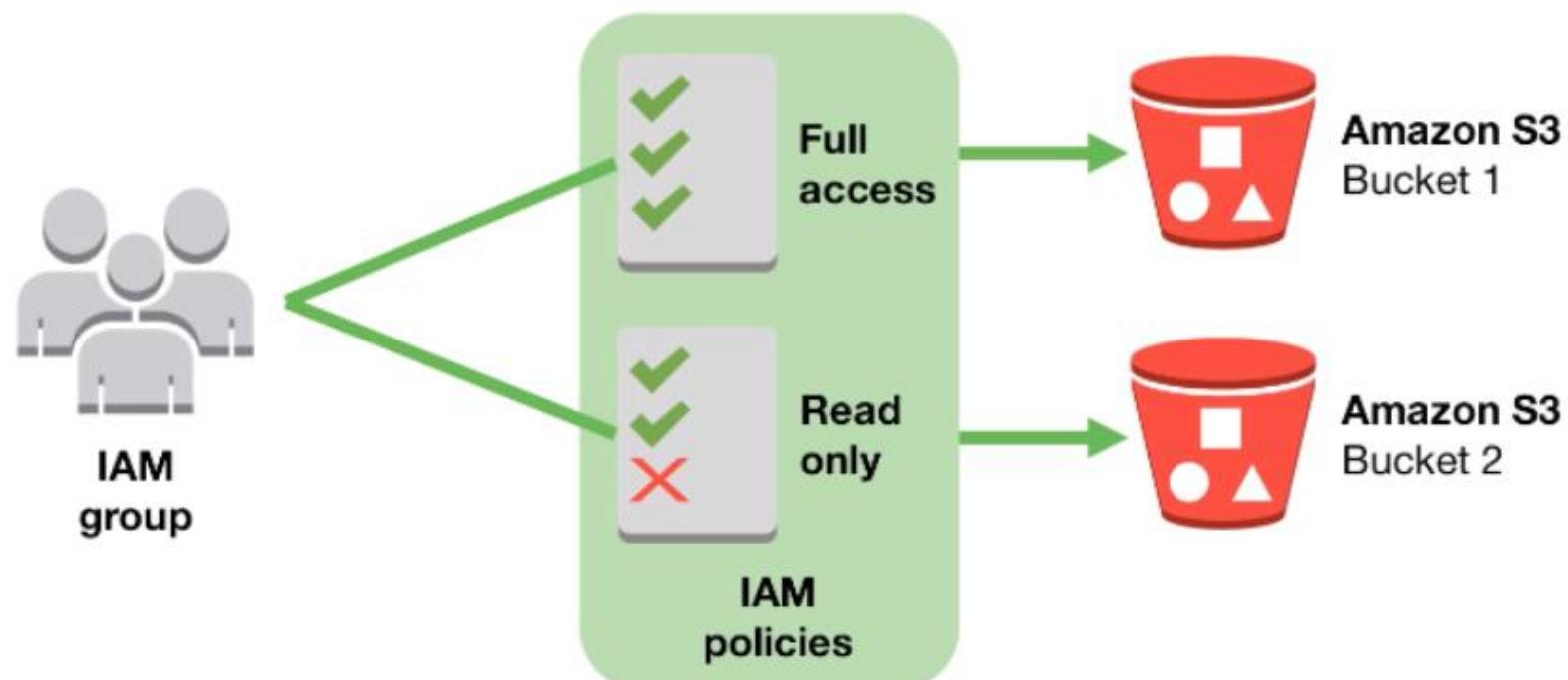
IAM USER



AWS IAM : Group



AWS IAM : Policy (ATZ)



AWS IAM: Role

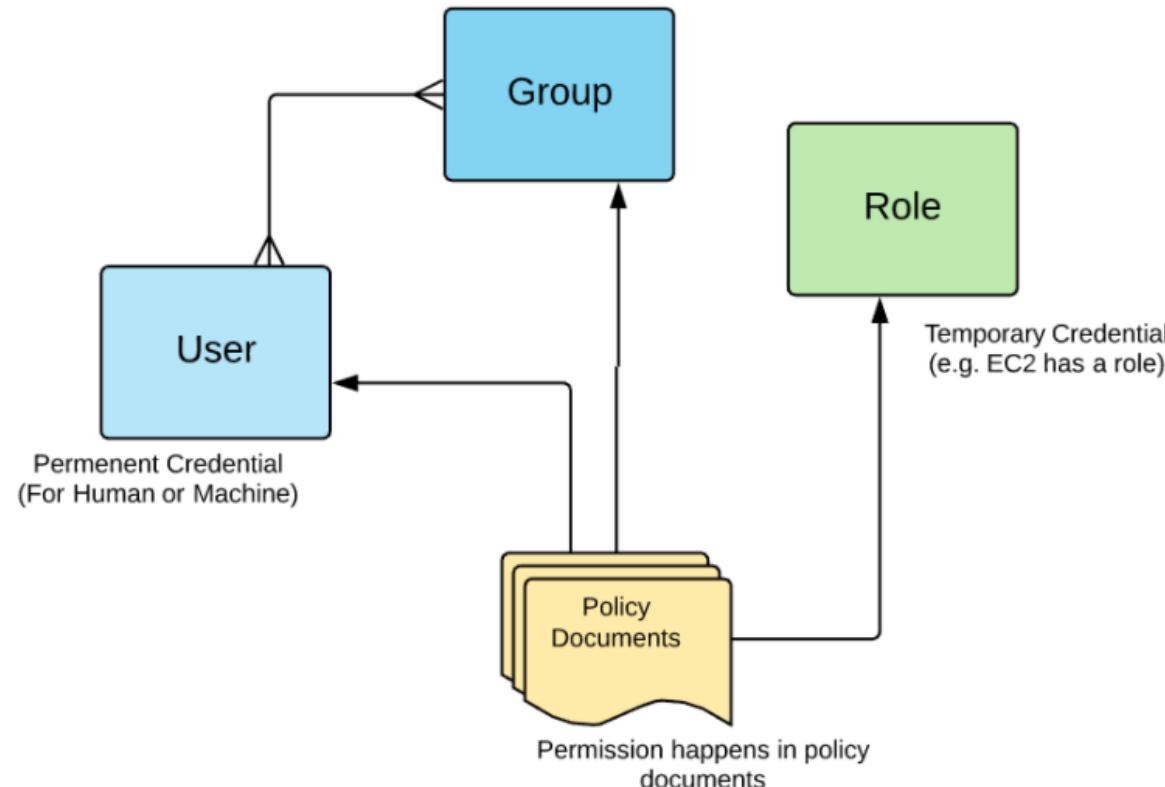
Role

An IAM identity that you can create in your account that has specific permissions. An IAM role has some similarities to an IAM user. Roles and users are both AWS identities with permissions policies that determine what the identity can and cannot do in AWS. However, instead of being uniquely associated with one person, a role is intended to be assumable by anyone who needs it. Also, a role does not have standard long-term credentials such as a password or access keys associated with it. Instead, when you assume a role, it provides you with temporary security credentials for your role session.

The screenshot shows the AWS IAM Roles page. On the left, there's a sidebar with 'Identity and Access Management (IAM)' and a 'Roles' section highlighted with a red arrow. The main area has a 'Create role' button and a search bar. A table lists several roles, all of which are highlighted with yellow boxes. The columns are 'Role name', 'Trusted entities', and 'Last activity'. The roles listed are:

Role name	Trusted entities	Last activity
AWSServiceRoleForAmazonEKS	AWS service: eks (Service-Linked role)	33 days
AWSServiceRoleForAmazonEKSForFargate	AWS service: eks-fargate (Service-Linked role)	34 days
AWSServiceRoleForAmazonEKSNodegroup	AWS service: eks-nodegroup (Service-Linked role)	33 days
AWSServiceRoleForAutoScaling	AWS service: autoscaling (Service-Linked role)	33 days
AWSServiceRoleForECS	AWS service: ecs (Service-Linked role)	None

IAM: User, Group, Policy, Role





Compute Services

Compute Service



Amazon
EC2



Amazon
ECS



Amazon
Lightsail



Amazon
EKS



Amazon
**Elastic
Beanstalk**



Amazon
Lambda



Amazon
Batch



AWS Fargate

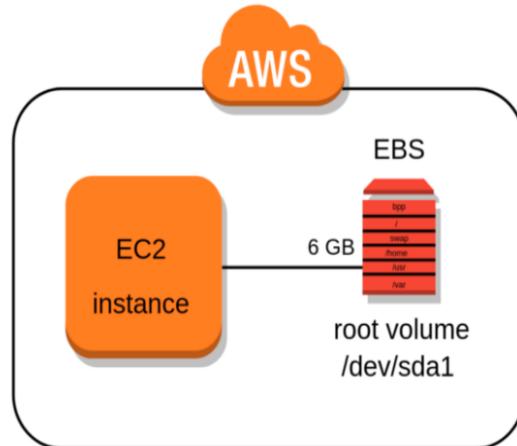
Compute

- ★ EC2
- Lightsail
- Lambda
- Batch
- Elastic Beanstalk
- Serverless Application Repository
- AWS Outposts
- EC2 Image Builder

Containers

- Elastic Container Registry
- Elastic Container Service
- Elastic Kubernetes Service

EC2 & Lambda



Amazon Elastic Compute Cloud (Amazon EC2) provides scalable computing capacity in the Amazon Web Services (AWS) Cloud. Using Amazon EC2 eliminates your need to invest in hardware up front, so you can develop and deploy applications faster. You can use Amazon EC2 to launch as many or as few virtual servers as you need, configure security and networking, and manage storage. Amazon EC2 enables you to scale up or down to handle changes in requirements or spikes in popularity, reducing your need to forecast traffic.



**Amazon
Lambda**

AWS Lambda is a serverless compute service that lets you run code without provisioning or managing servers, creating workload-aware cluster scaling logic, maintaining event integrations, or managing runtimes. With Lambda, you can run code for virtually any type of application or backend service - all with zero administration. Just upload your code as a ZIP file or container image, and Lambda automatically and precisely allocates compute execution power and runs your code based on the incoming request or event, for any scale of traffic. You can set up your code to automatically trigger from 140 AWS services or call it directly from any web or mobile app. You can write Lambda functions in your favorite language (Node.js, Python, Go, Java, and more) and use both serverless and container tools, such as AWS SAM or Docker CLI, to build, test, and deploy your functions.

Beanstalk & Lightsail



AWS Elastic Beanstalk is an easy-to-use service for deploying and scaling web applications and services developed with Java, .NET, PHP, Node.js, Python, Ruby, Go, and Docker on familiar servers such as Apache, Nginx, Passenger, and IIS.

You can simply upload your code and Elastic Beanstalk automatically handles the deployment, from capacity provisioning, load balancing, auto-scaling to application health monitoring. At the same time, you retain full control over the AWS resources powering your application and can access the underlying resources at any time.



AmazonLightsail

Lightsail is an easy-to-use cloud platform that offers you everything needed to build an application or website, plus a cost-effective, monthly plan. Whether you're new to the cloud or looking to get on the cloud quickly with AWS infrastructure you trust, we've got you covered.

ECS, EKS, Fargate

	 ECS (Elastic Container Service)	 EKS (Elastic Kubernetes Service)	 Fargate (AWS Fargate Service)
Definition	Container Orchestration, Created by AWS	Managed Kubernetes (Open Source) platform by AWS	Container on-demand
Cluster Creation	Requires	Requires	Not Required
Control Plane Cost	0, pay for work nodes	144 \$*, Pay for work nodes	Pay for task based on CPU & Memory
Integration	Deeper Integration with other AWS services	Actively working on Integrations	Currently runs on ECS
Use case	Good for native container architecture	Easy to move on-prem Kubernetes to AWS EKS	Good for workload which runs on duration.

AWS Batch

AWS BATCH

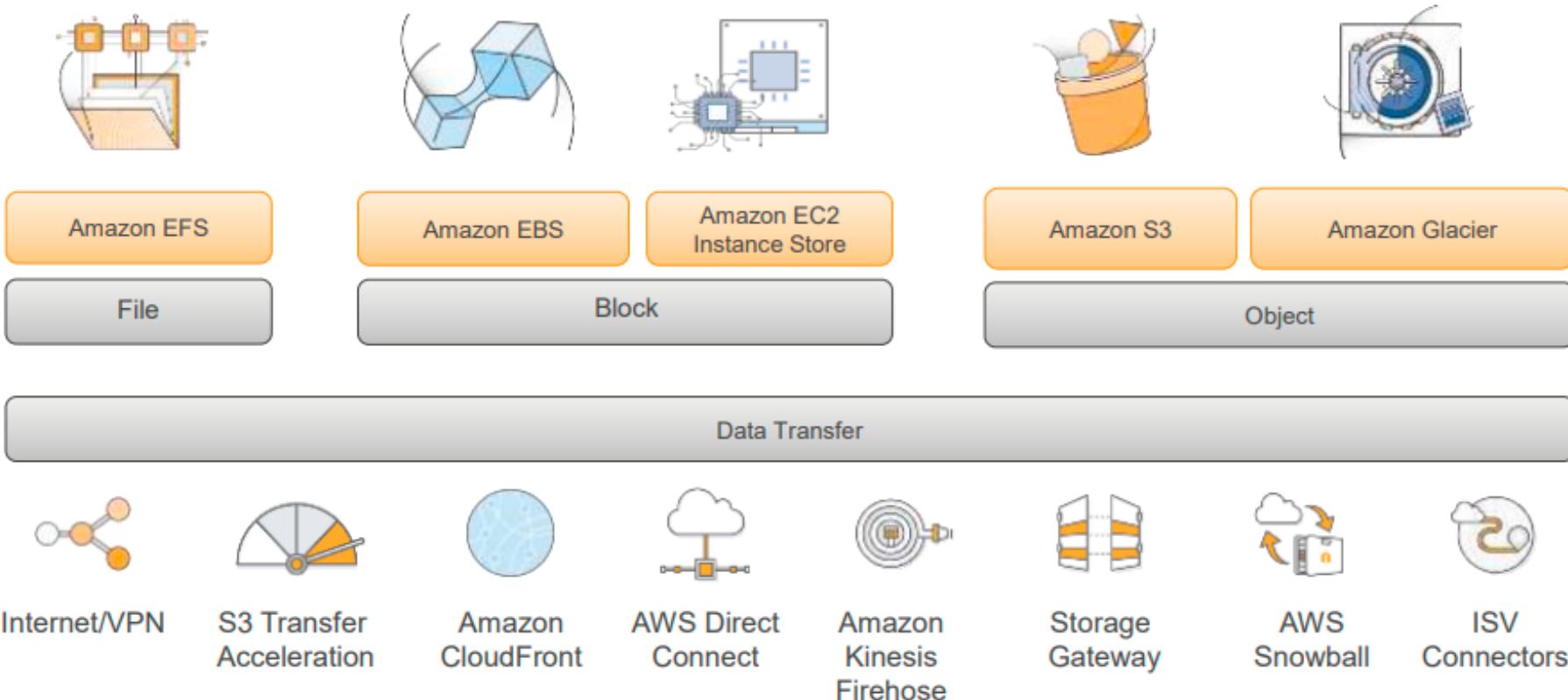


AWS Batch enables developers, scientists, and engineers to easily and efficiently run hundreds of thousands of batch computing jobs on AWS. AWS Batch dynamically provisions the optimal quantity and type of compute resources (e.g., CPU or memory optimized instances) based on the volume and specific resource requirements of the batch jobs submitted. With AWS Batch, there is no need to install and manage batch computing software or server clusters that you use to run your jobs, allowing you to focus on analyzing results and solving problems. AWS Batch plans, schedules, and executes your batch computing workloads across the full range of AWS compute services and features, such as AWS Fargate, Amazon EC2 and Spot Instances.



Storage Services

AWS Storage Service



AWS Storage Service

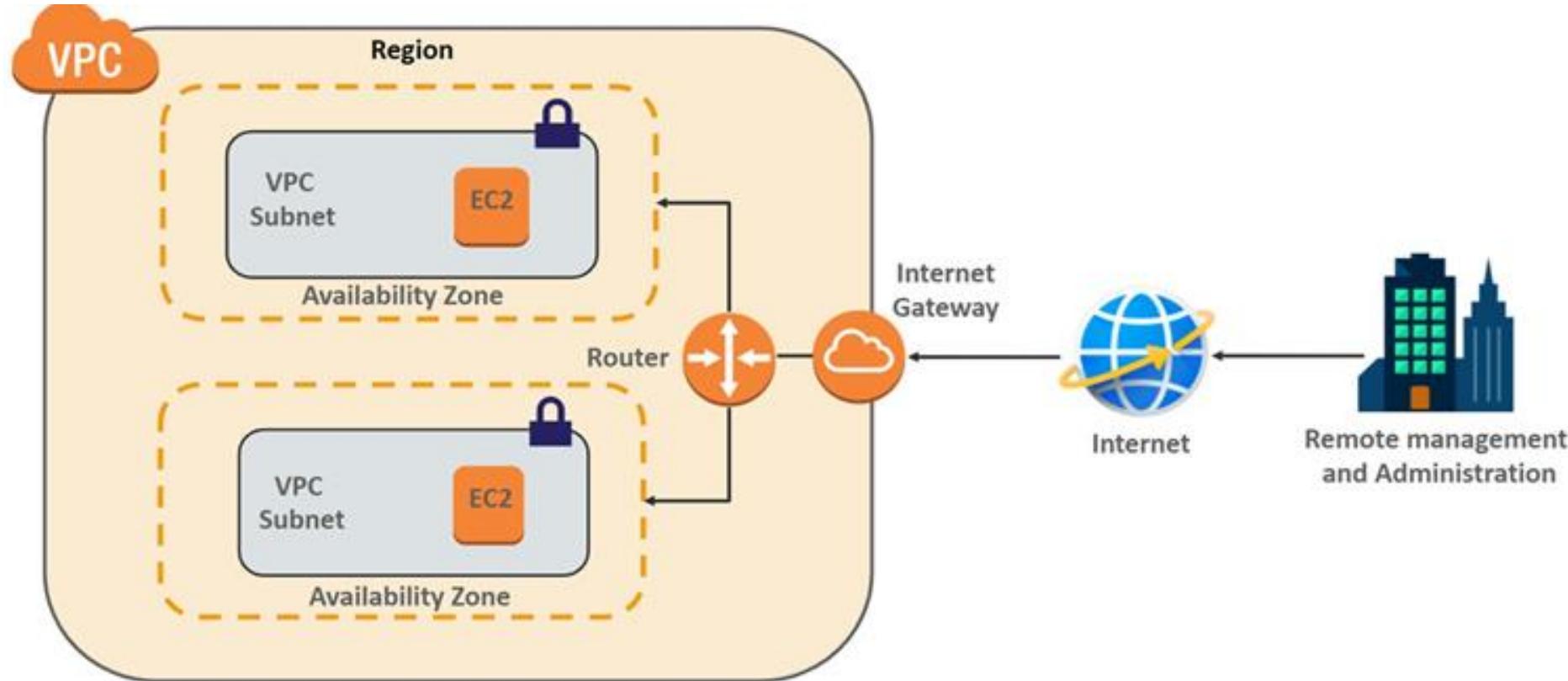
- **Amazon S3:** Durable Object storage for all types of data.
Economical Pay as you go, No upfront investment, No commitment.
- **Amazon Glacier:** Archival storage for infrequently accessed data.
Easy to Use: Self service administration, SDKs for simple integration.
- **Amazon EBS:** Block storage for use with Amazon EC2.
Reduce risk: Durable and Secure, Avoid risks of physical media handling.
- **Amazon EFS:** File storage for use with Amazon EC2.
Agility, Scale: Reduce time to market, Focus on your business, not your infrastructure.



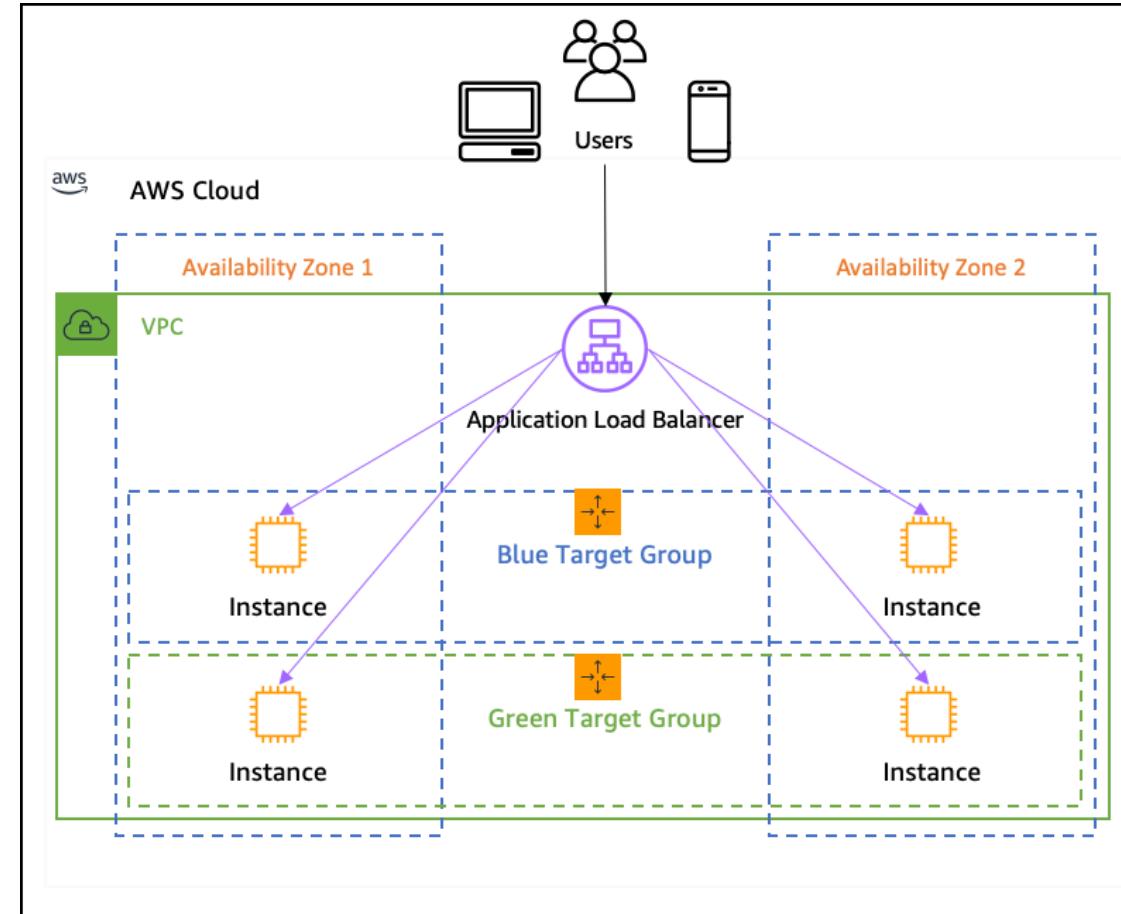


Network Services

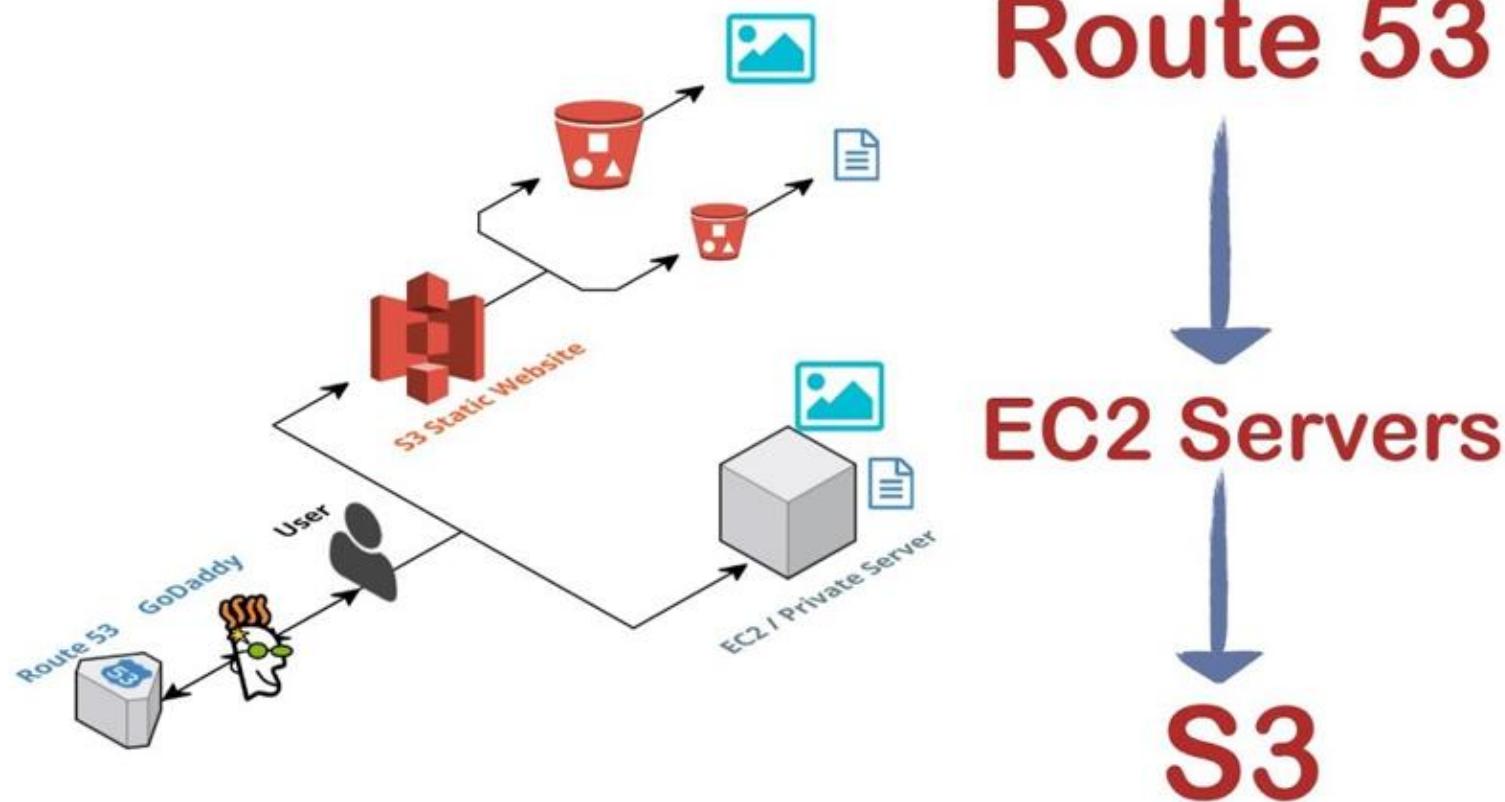
Network: VPC, Subnet, Gateway



Network: Load Balancer

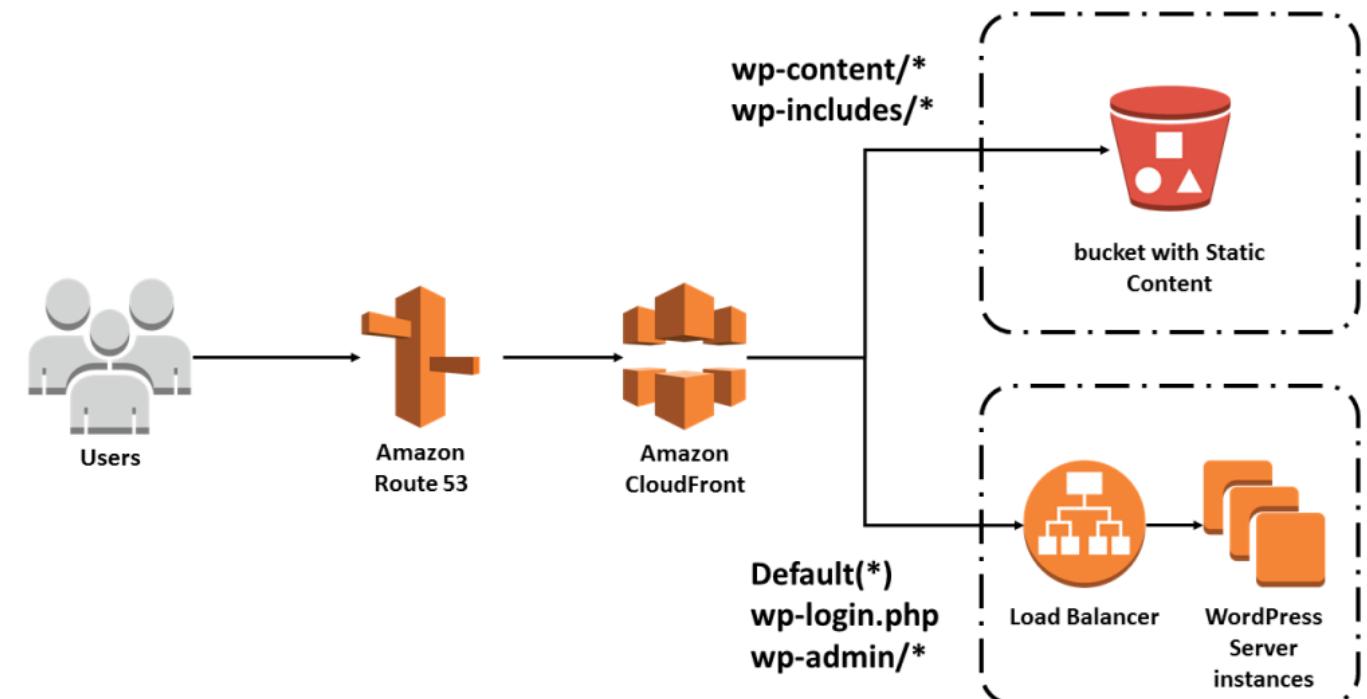


DNS: Route 53



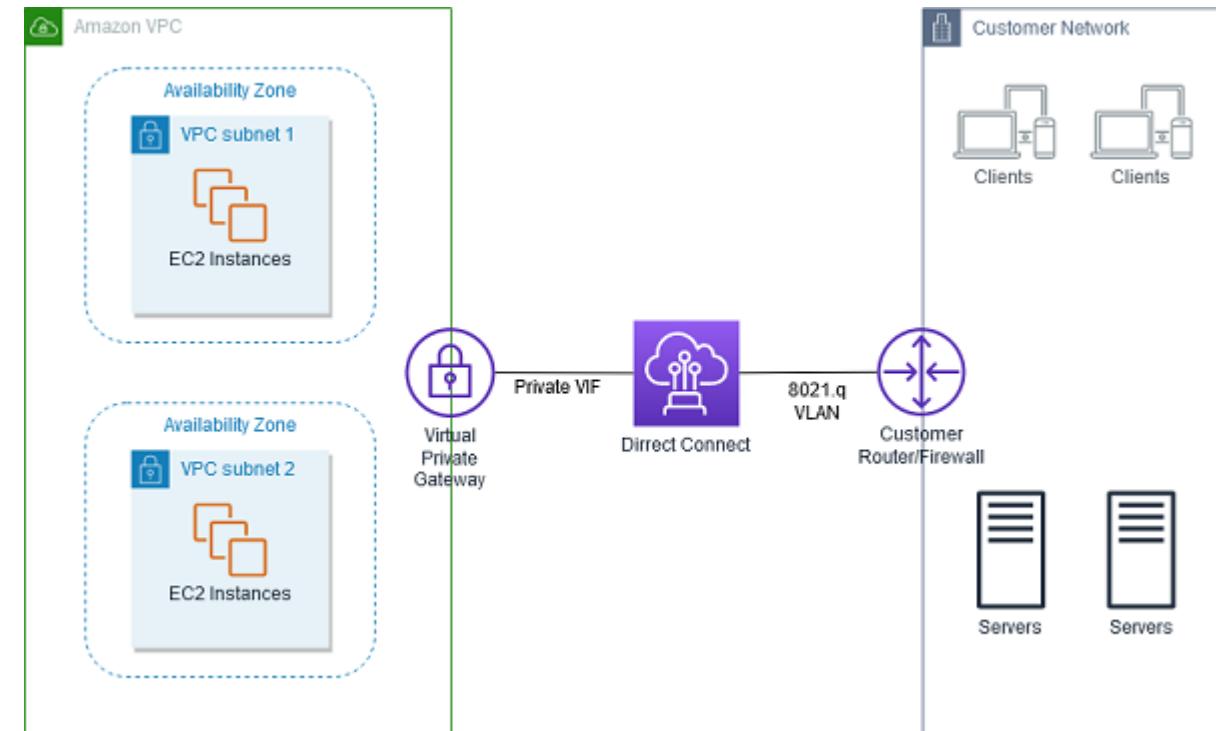
CDN: CloudFront

Amazon CloudFront is a fast content delivery network (CDN) service that securely delivers data, videos, applications, and APIs to customers globally with low latency, high transfer speeds, all within a developer-friendly environment.



Direct Connect

AWS Direct Connect is a cloud service solution that makes it easy to establish a dedicated network connection from your premises to AWS. Using AWS Direct Connect, you can establish private connectivity between AWS and your datacenter, office, or colocation environment, which in many cases can reduce your network costs, increase bandwidth throughput, and provide a more consistent network experience than Internet-based connections.





Database Services

AWS Database Services

- **Amazon RDS:** Amazon Relational Database Service (OLTP) makes it easy to set up, operate, and scale a relational database in the cloud..
- **Amazon Dynamo DB:** Key-value and document database that delivers single-digit millisecond performance at any scale. It's a fully managed, multiregional, multi-master and durable database.
- **Amazon Redshift:** Redshift (OLAP) makes it simple and cost effective to run high performance queries on petabytes of structured data so that you can build powerful reports and dashboards using your existing business intelligence tools.
- **Amazon Elastic Cache:** Its is a in memory database that provides sub-millisecond latency to power internet-scale real-time applications.
- **Amazon Aurora:** MySQL and PostgreSQL-compatible relational database built for the cloud, that combines the performance and availability of traditional enterprise databases with the simplicity and cost-effectiveness of open source databases.



Amazon
Redshift



Amazon
ElastiCache

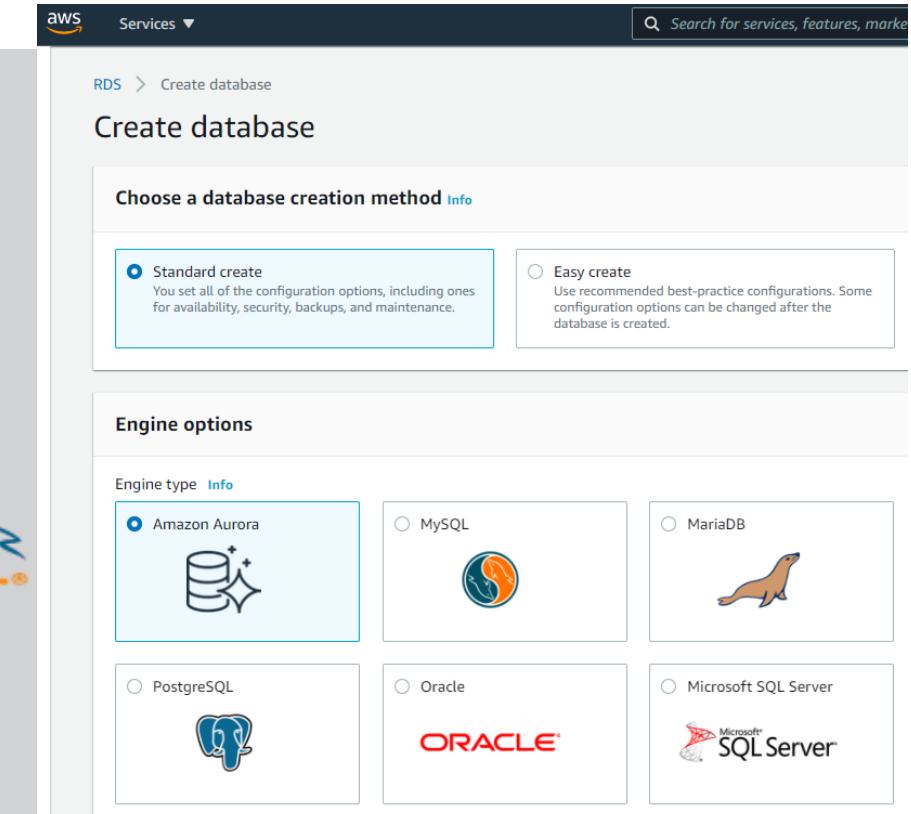


Amazon
RDS



Amazon
DynamoDB
Accelerator

Amazon RDS

Create database

Choose a database creation method

- Standard create
You set all of the configuration options, including ones for availability, security, backups, and maintenance.
- Easy create
Use recommended best-practice configurations. Some configuration options can be changed after the database is created.

Engine options

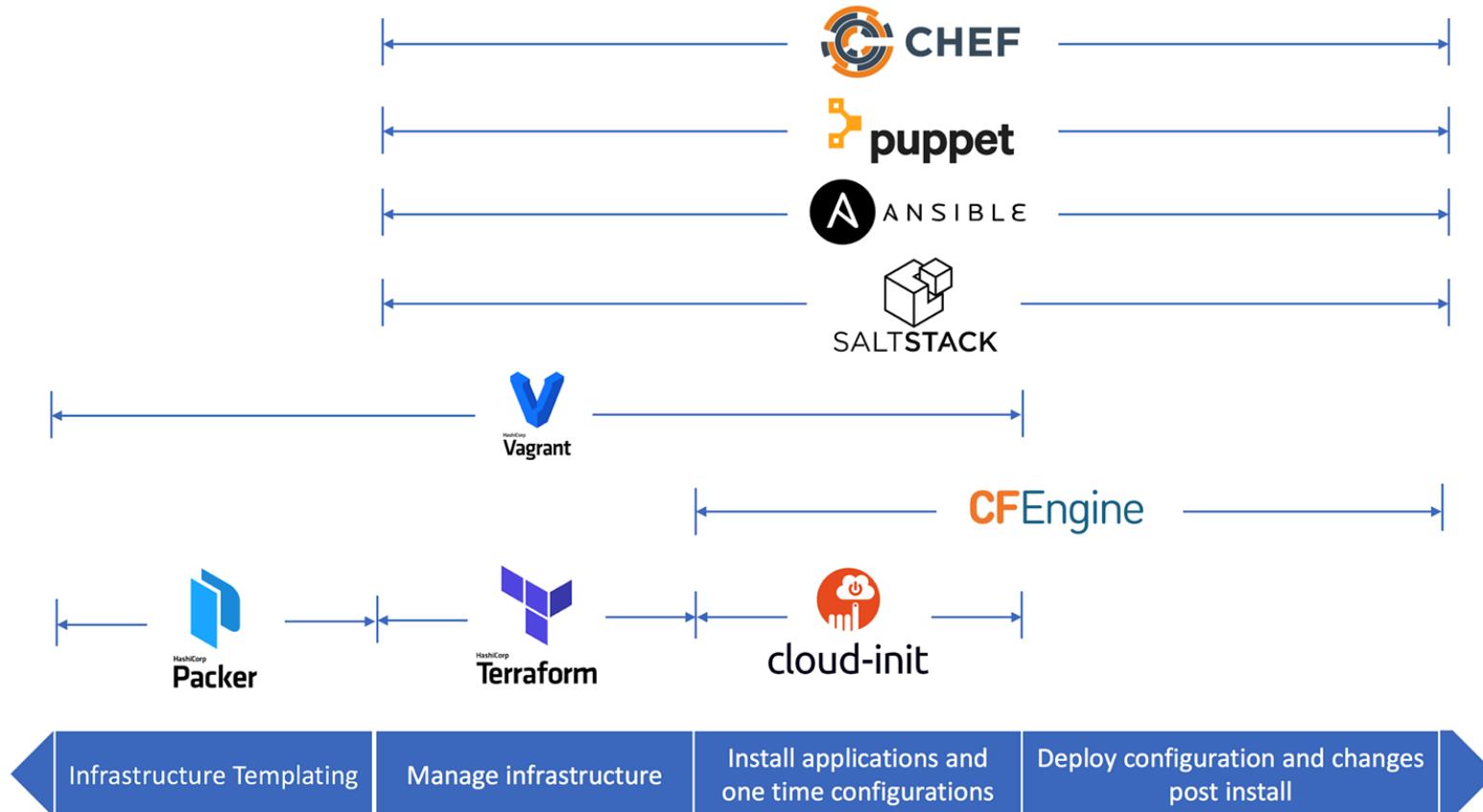
Engine type

- Amazon Aurora
- MySQL
- MariaDB
- PostgreSQL
- Oracle
- Microsoft SQL Server



Automation & Configuration Management

IaC Spectrum: Open Source



AWS Cloud Formation



AWS CloudFormation gives you an easy way to model a collection of related AWS and third-party resources, provision them quickly and consistently, and manage them throughout their lifecycles, by treating infrastructure as code. A CloudFormation template describes your desired resources and their dependencies so you can launch and configure them together as a stack. You can use a template to create, update, and delete an entire stack as a single unit, as often as you need to, instead of managing resources individually. You can manage and provision stacks across multiple AWS accounts and AWS Regions.

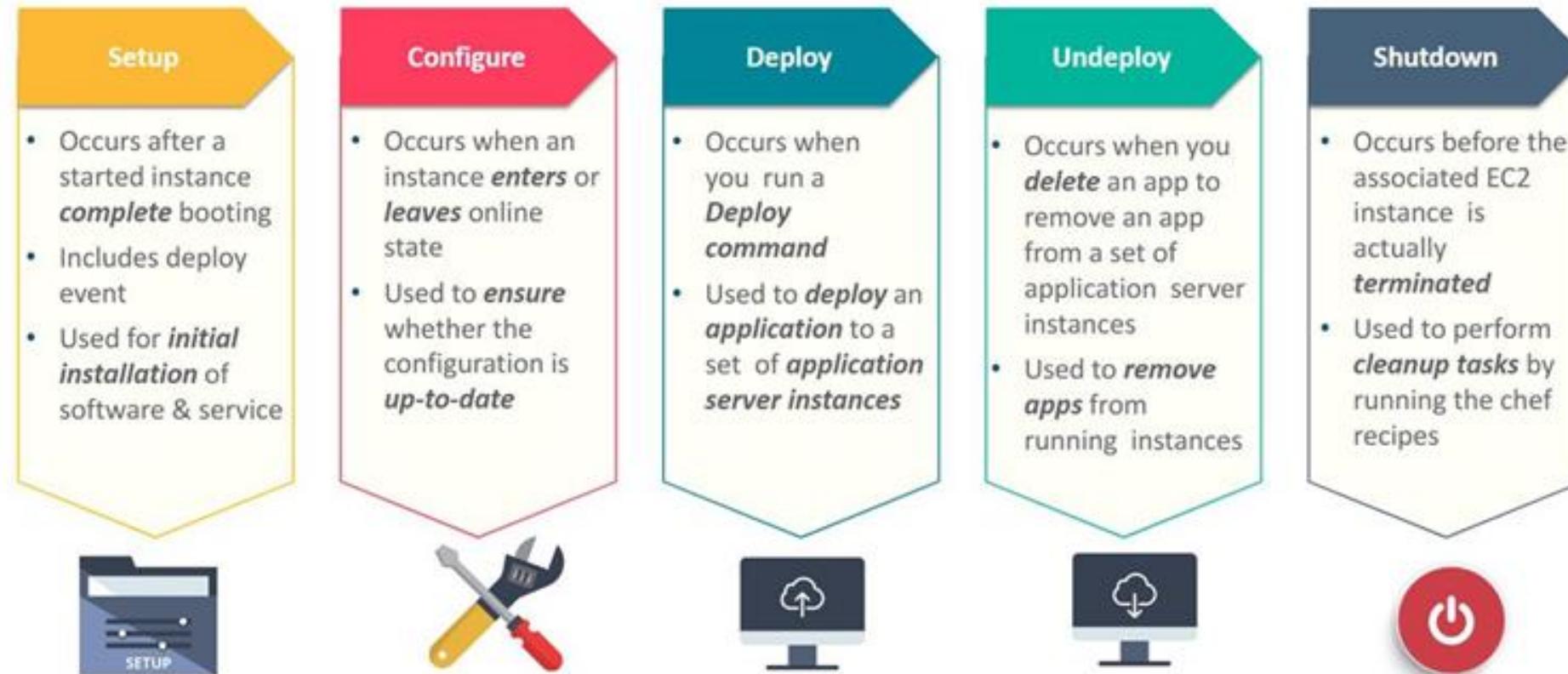


AWS OpsWorks



AWS OpsWorks is a configuration management service that provides managed instances of Chef and Puppet. Chef and Puppet are automation platforms that allow you to use code to automate the configurations of your servers. OpsWorks lets you use Chef and Puppet to automate how servers are configured, deployed, and managed across your Amazon EC2 instances or on-premises compute environments. OpsWorks has three offerings, AWS Opsworks for Chef Automate, AWS OpsWorks for Puppet Enterprise, and AWS OpsWorks Stacks.

OpsWorks Lifecycle Events





Audit & Monitoring

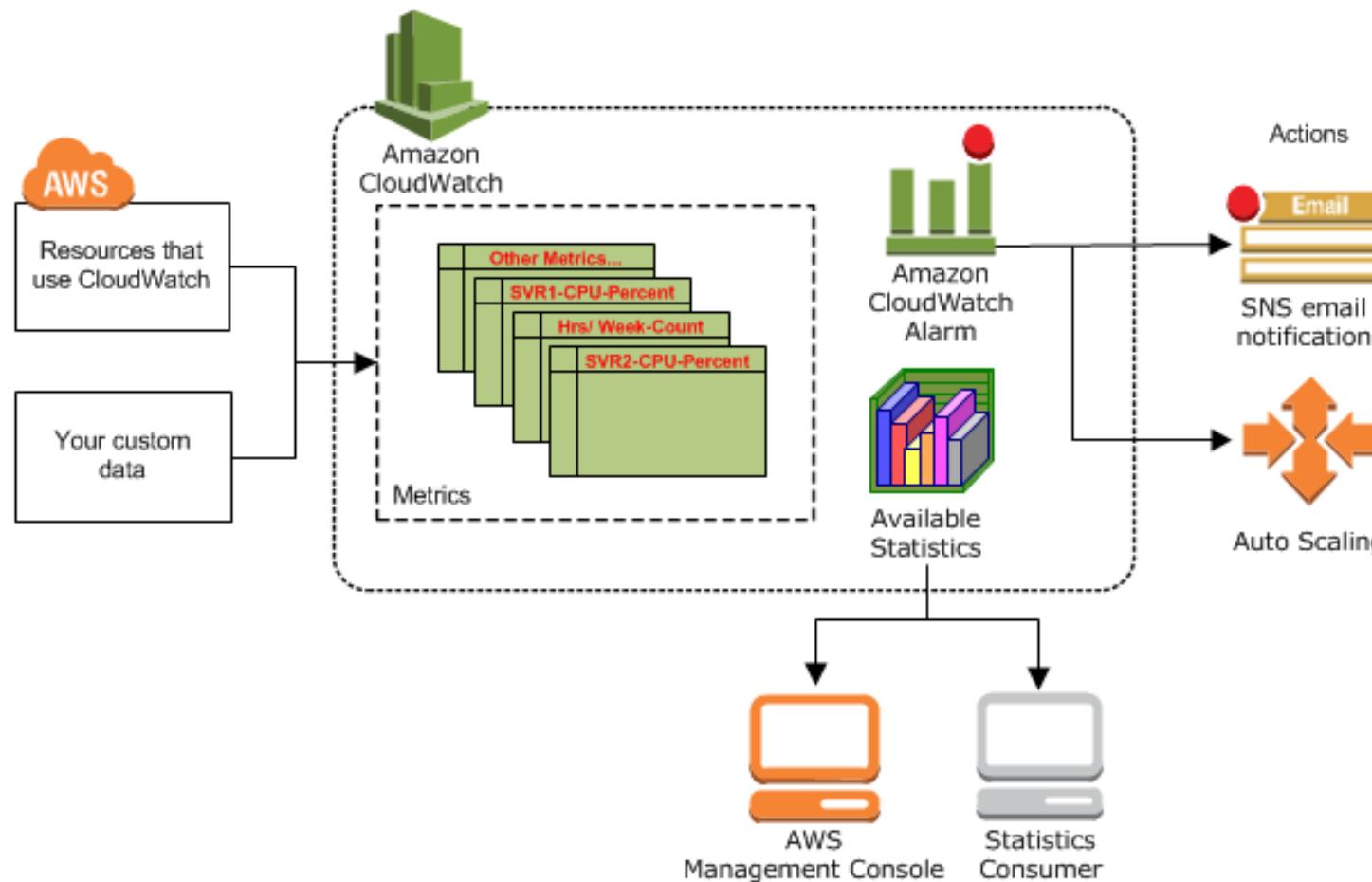
AWS CloudWatch



Amazon
CloudWatch

Amazon CloudWatch is a monitoring and observability service built for DevOps engineers, developers, site reliability engineers (SREs), and IT managers. CloudWatch provides you with data and actionable insights to monitor your applications, respond to system-wide performance changes, optimize resource utilization, and get a unified view of operational health. CloudWatch collects monitoring and operational data in the form of logs, metrics, and events, providing you with a unified view of AWS resources, applications, and services that run on AWS and on-premises servers. You can use CloudWatch to detect anomalous behavior in your environments, set alarms, visualize logs and metrics side by side, take automated actions, troubleshoot issues, and discover insights to keep your applications running smoothly.

AWS CloudWatch

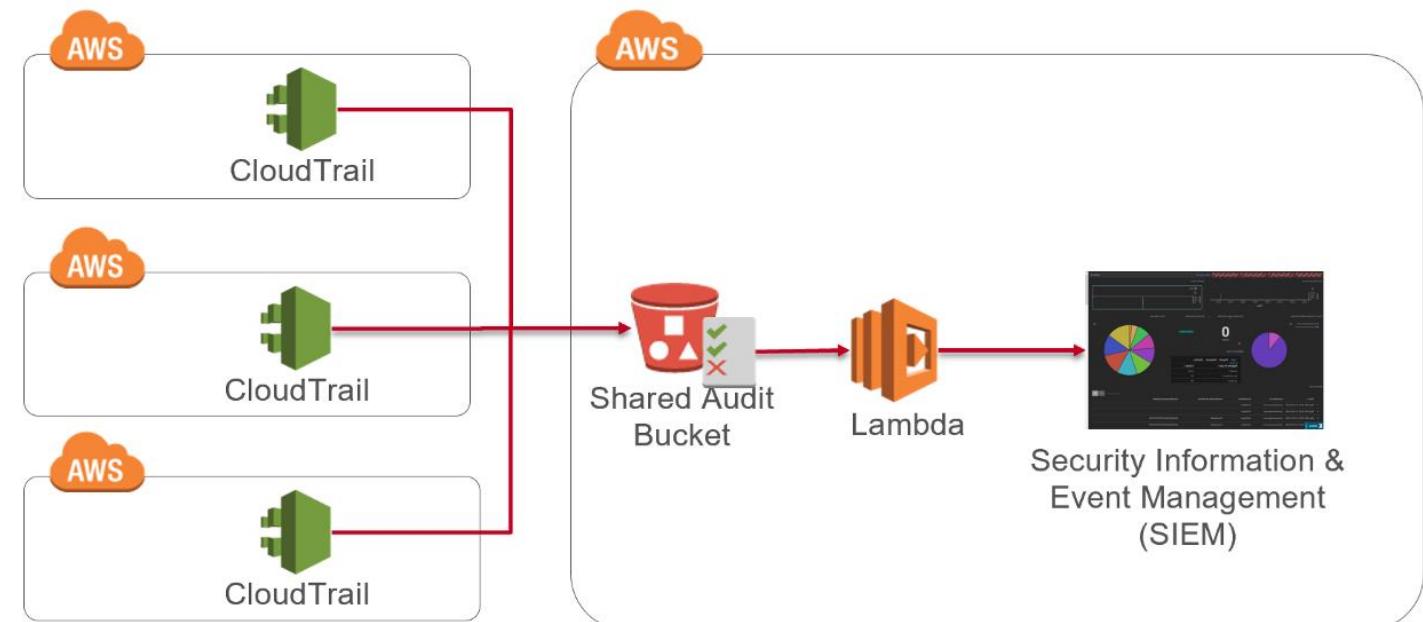
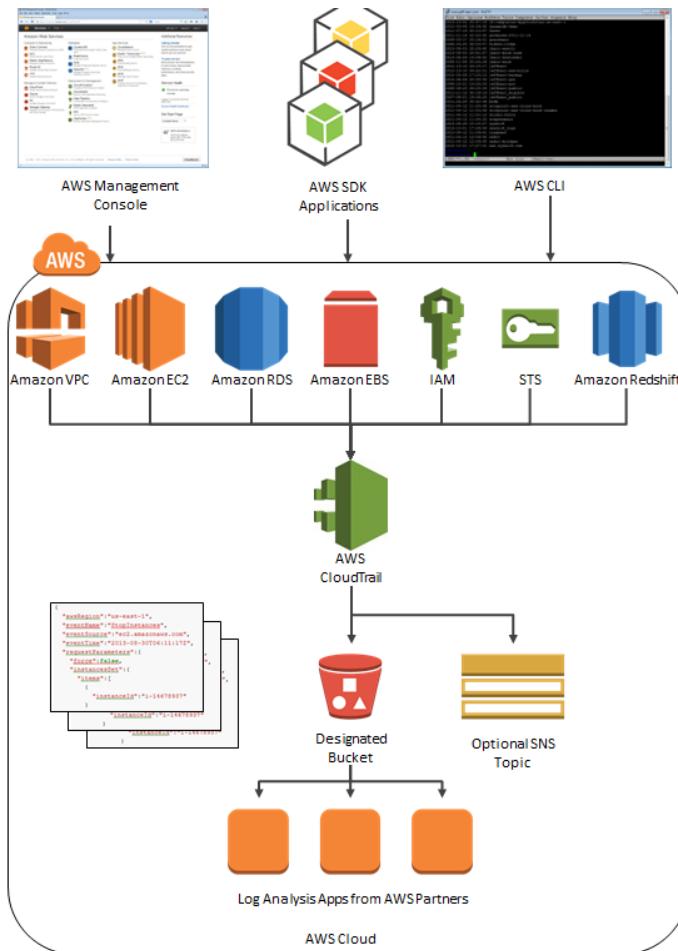


AWS CloudTrail



AWS CloudTrail is a service that enables governance, compliance, operational auditing, and risk auditing of your AWS account. With CloudTrail, you can log, continuously monitor, and retain account activity related to actions across your AWS infrastructure. CloudTrail provides event history of your AWS account activity, including actions taken through the AWS Management Console, AWS SDKs, command line tools, and other AWS services. This event history simplifies security analysis, resource change tracking, and troubleshooting. In addition, you can use CloudTrail to detect unusual activity in your AWS accounts. These capabilities help simplify operational analysis and troubleshooting.

AWS CloudTrail





SNS, SES, SQS, SWF Application Services

AWS SNS



Amazon
SNS

Amazon Simple Notification Service (Amazon SNS) is a fully managed messaging service for both application-to-application (A2A) and application-to-person (A2P) communication.

The A2A pub/sub functionality provides topics for high-throughput, push-based, many-to-many messaging between distributed systems, microservices, and event-driven serverless applications. Using Amazon SNS topics, your publisher systems can fanout messages to a large number of subscriber systems including Amazon SQS queues, AWS Lambda functions and HTTPS endpoints, for parallel processing. The A2P functionality enables you to send messages to users at scale via SMS, mobile push, and email.

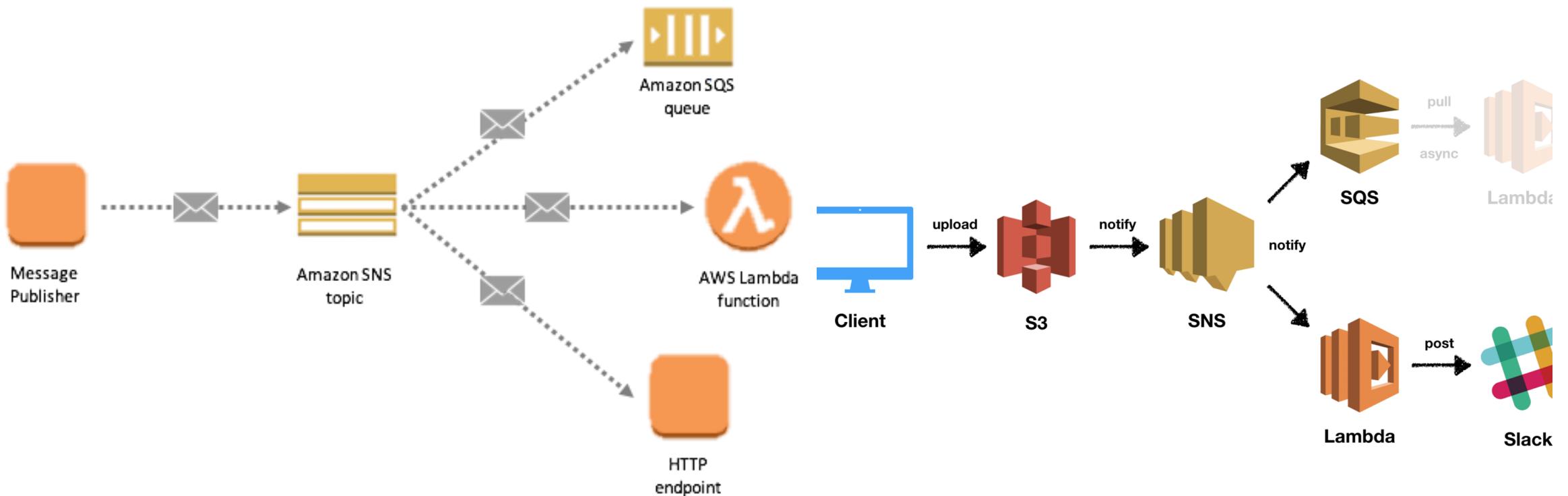
AWS SQS



Amazon
SQS

Amazon Simple Queue Service (SQS) is a fully managed message queuing service that enables you to decouple and scale microservices, distributed systems, and serverless applications. SQS eliminates the complexity and overhead associated with managing and operating message oriented middleware, and empowers developers to focus on differentiating work. Using SQS, you can send, store, and receive messages between software components at any volume, without losing messages or requiring other services to be available. Get started with SQS in minutes using the AWS console, Command Line Interface or SDK of your choice, and three simple commands.

AWS SNS & SQS



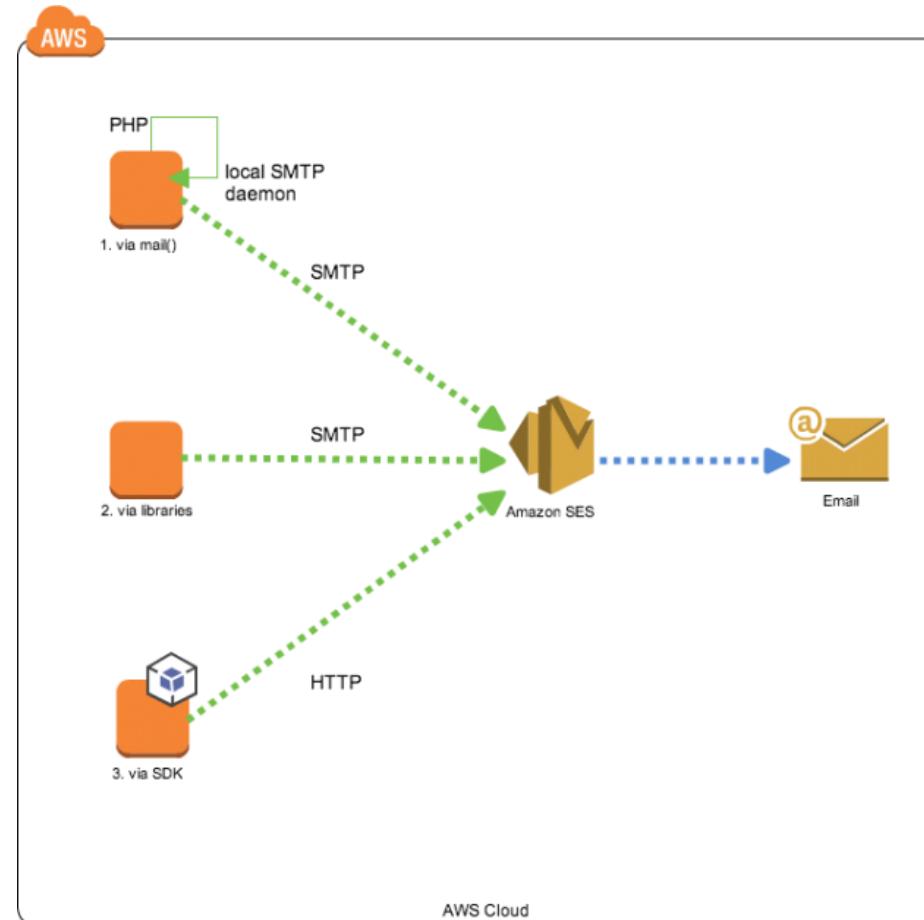
AWS SES



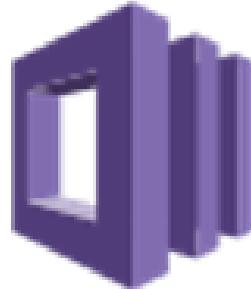
Amazon SES

Amazon Simple Email Service (SES) is a cost-effective, flexible, and scalable email service that enables developers to send mail from within any application. You can configure Amazon SES quickly to support several email use cases, including transactional, marketing, or mass email communications. Amazon SES's flexible IP deployment and email authentication options help drive higher deliverability and protect sender reputation, while sending analytics measure the impact of each email. With Amazon SES, you can send email securely, globally, and at scale.

AWS SES



AWS SWF

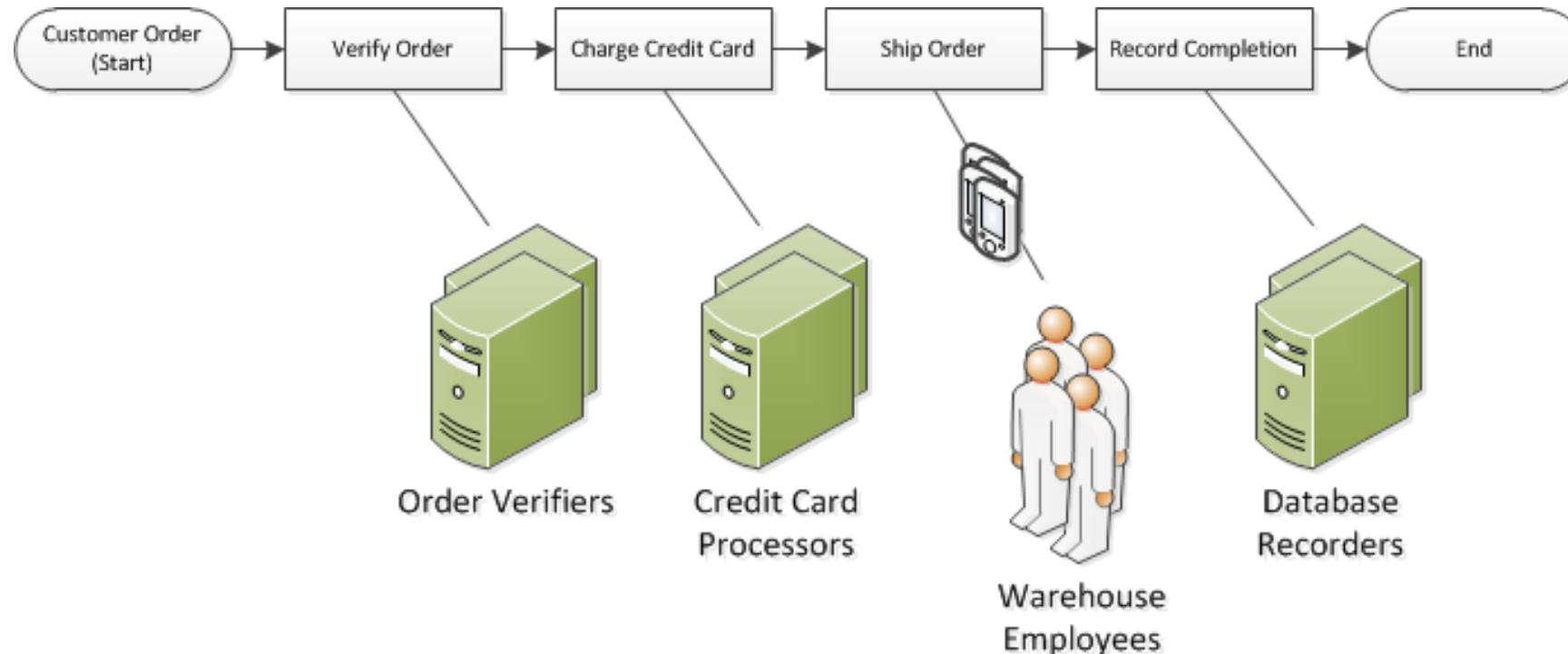


Amazon SWF

Amazon SWF helps developers build, run, and scale background jobs that have parallel or sequential steps. You can think of Amazon SWF as a fully-managed state tracker and task coordinator in the Cloud.

If your app's steps take more than 500 milliseconds to complete, you need to track the state of processing, and you need to recover or retry if a task fails, Amazon SWF can help you.

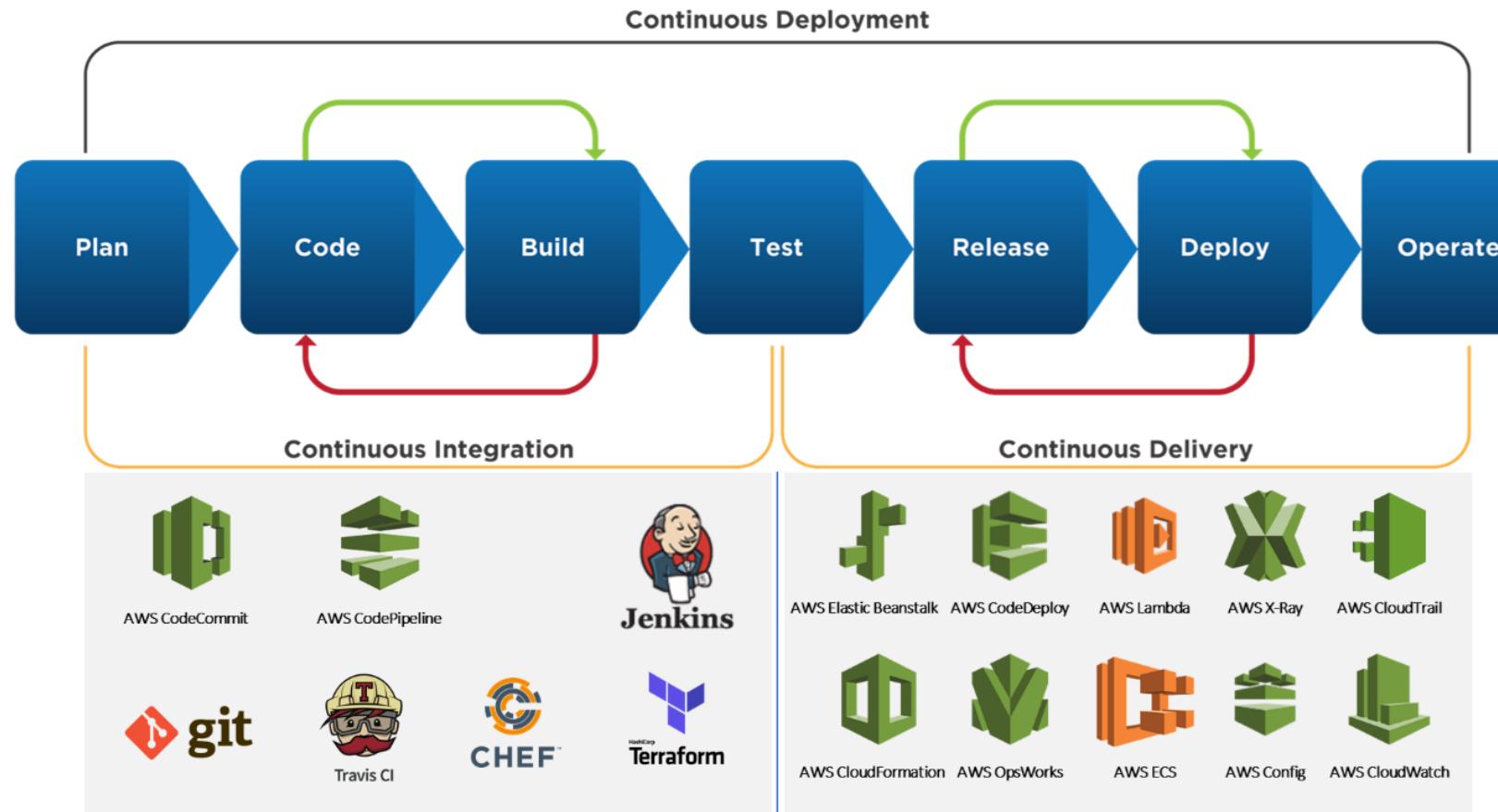
AWS SWF: Use Case





DevOps Tools

AWS DevOps Tools



AWS CodeCommit



AWS CodeCommit is a **fully-managed source control** service that **hosts secure Git-based repositories**. It makes it easy for **teams to collaborate on code** in a secure and highly scalable ecosystem. CodeCommit **eliminates the need to operate your own source control system** or worry about scaling its infrastructure. You can use CodeCommit to securely store anything from source code to binaries, and it works seamlessly with your existing Git tools.



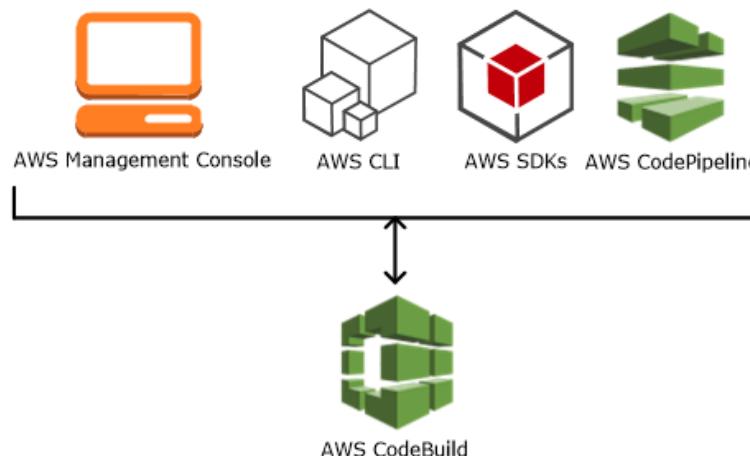
Developers



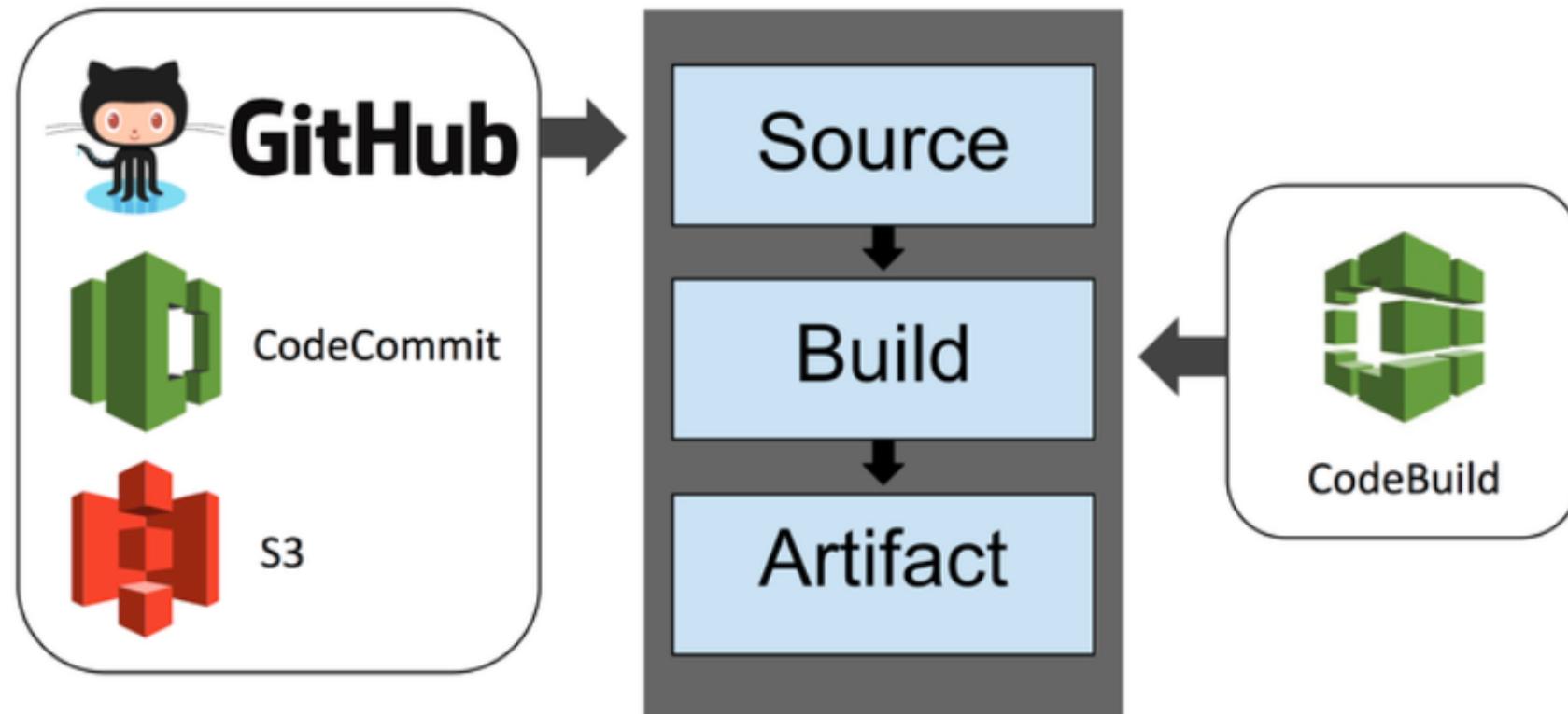
AWS CodeBuild



AWS CodeBuild is a fully managed continuous integration service that compiles source code, runs tests, and produces software packages that are ready to deploy. With CodeBuild, you don't need to provision, manage, and scale your own build servers. CodeBuild scales continuously and processes multiple builds concurrently, so your builds are not left waiting in a queue. You can get started quickly by using prepackaged build environments, or you can create custom build environments that use your own build tools. With CodeBuild, you are charged by the minute for the compute resources you use.



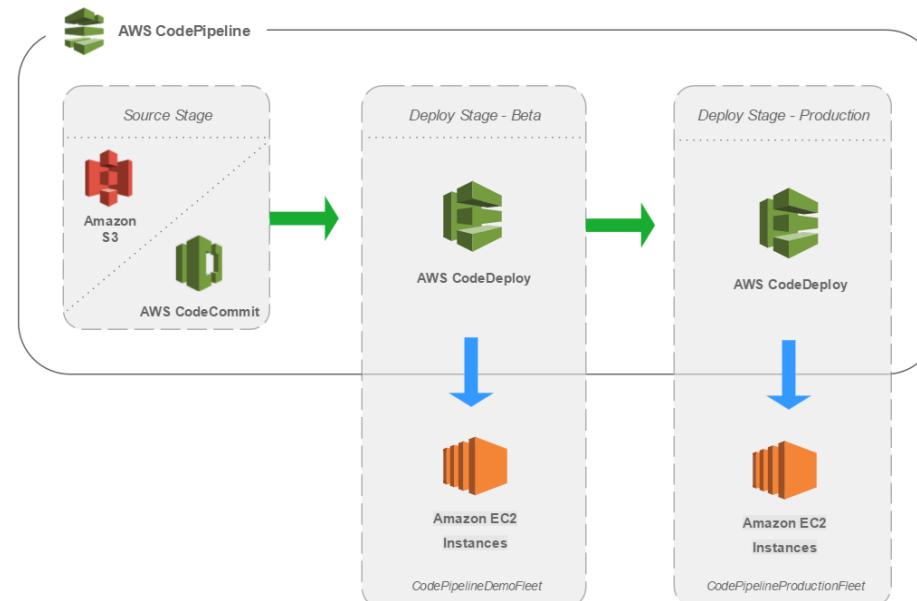
AWS Code Commit + Build



AWS CodeDeploy



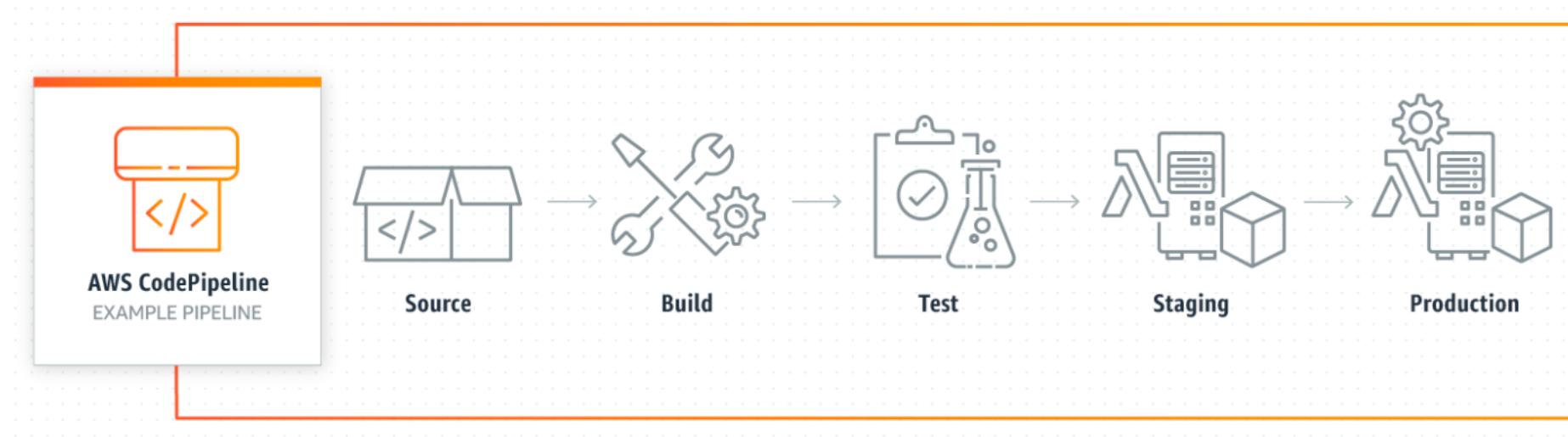
AWS CodeDeploy is a fully managed deployment service that automates software deployments to a variety of compute services such as Amazon EC2, AWS Fargate, AWS Lambda, and your on-premises servers. AWS CodeDeploy makes it easier for you to rapidly release new features, helps you avoid downtime during application deployment, and handles the complexity of updating your applications. You can use AWS



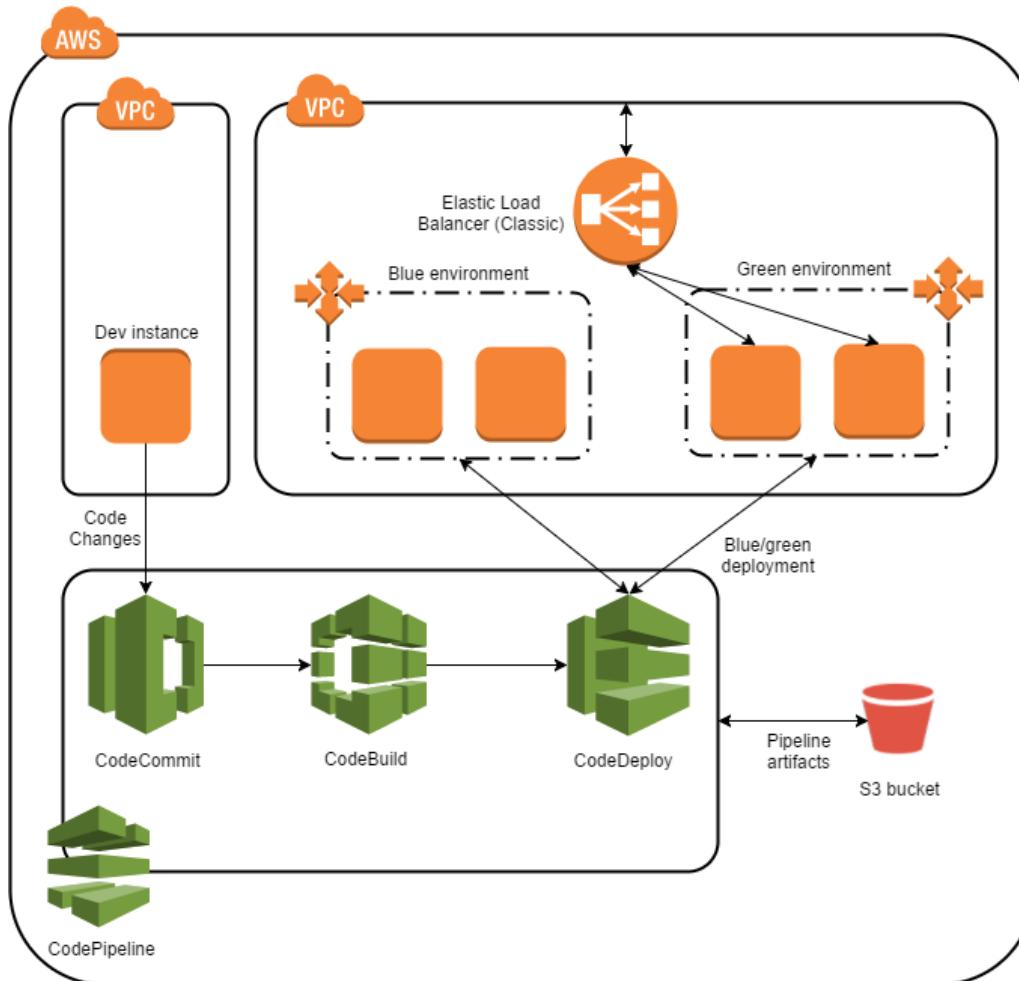
AWS CodePipeline



AWS **CodePipeline** is a fully managed continuous delivery service that helps you automate your release pipelines for fast and reliable application and infrastructure updates. CodePipeline automates the build, test, and deploy phases of your release process every time there is a code change, based on the release model you define. This enables you to rapidly and reliably deliver features and updates. You can easily integrate AWS



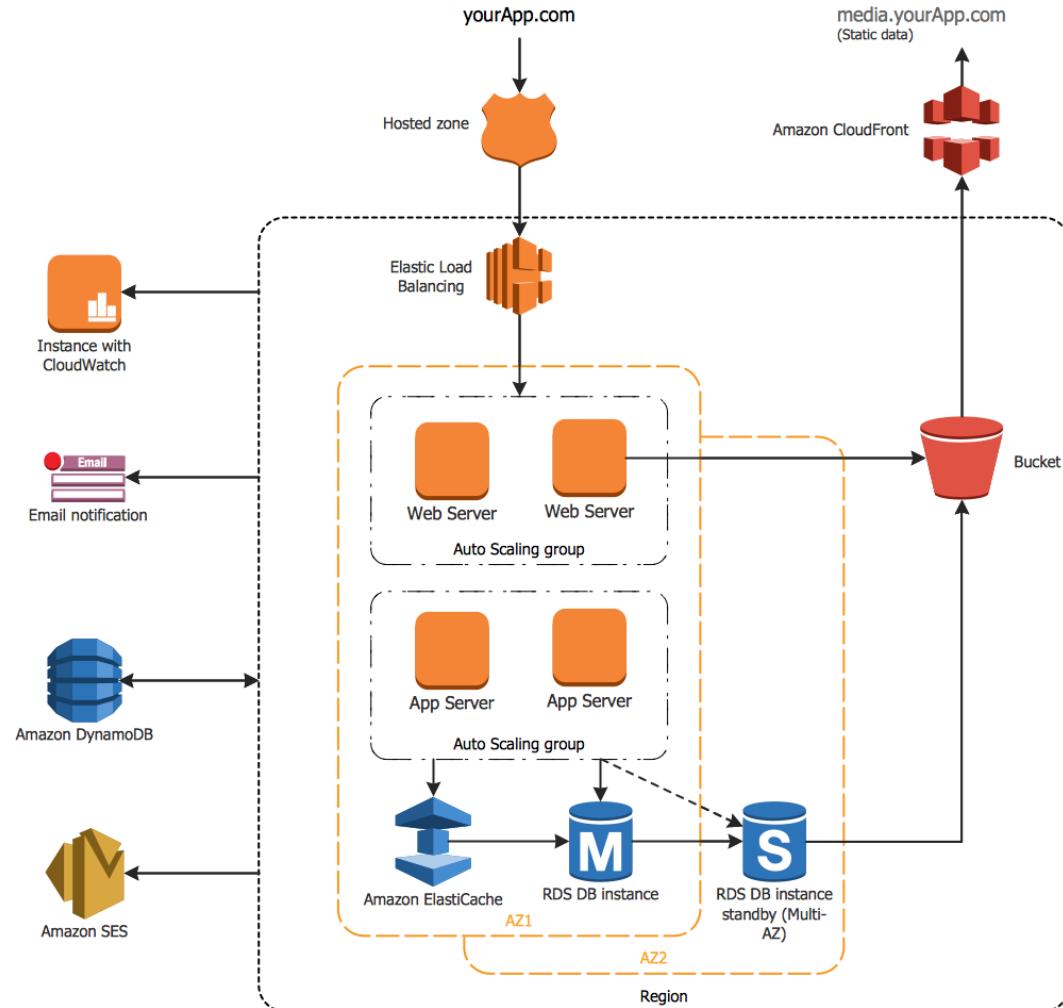
Putting It Together



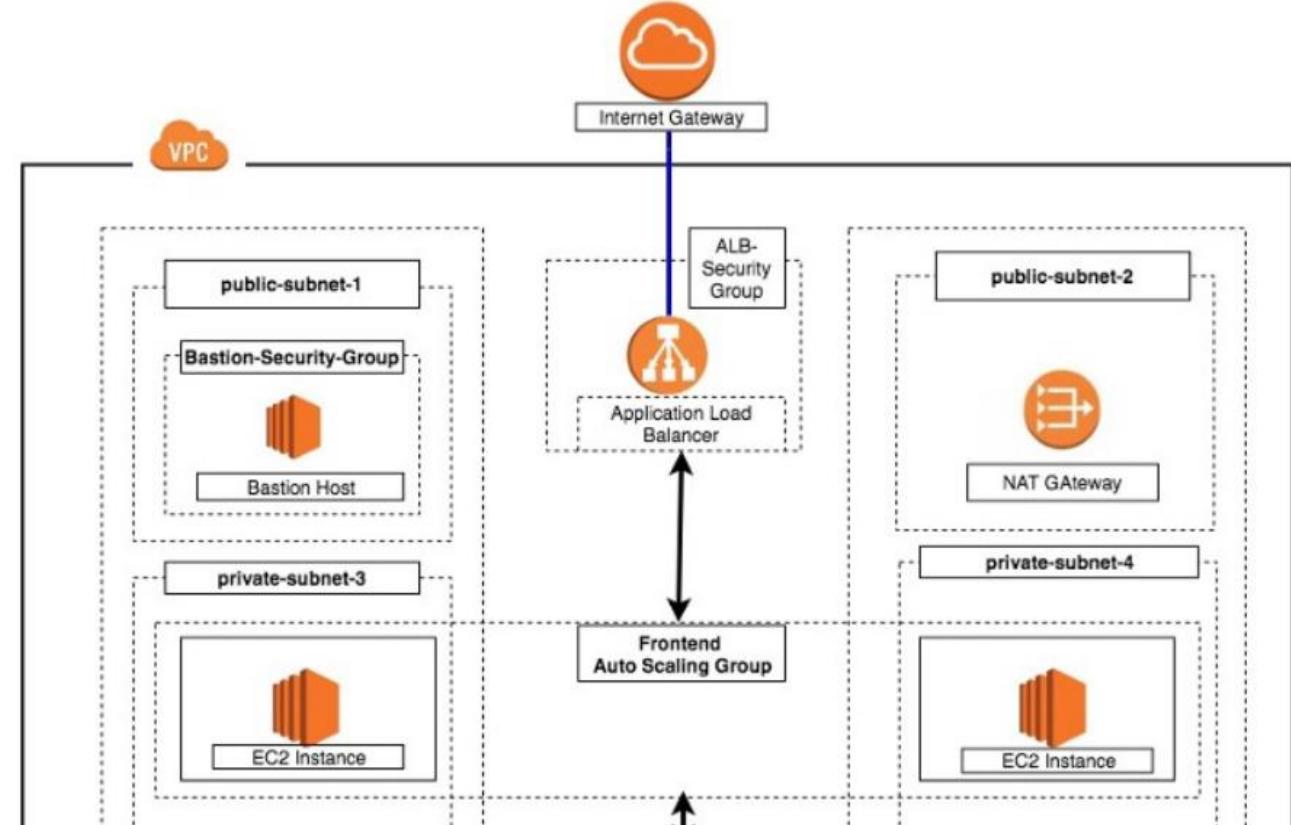
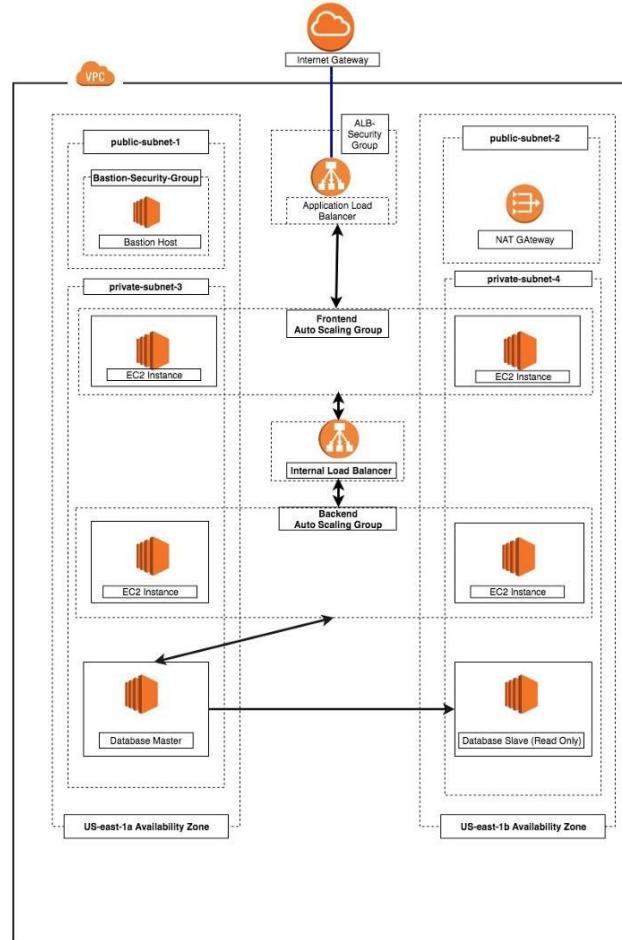


AWS Architecture

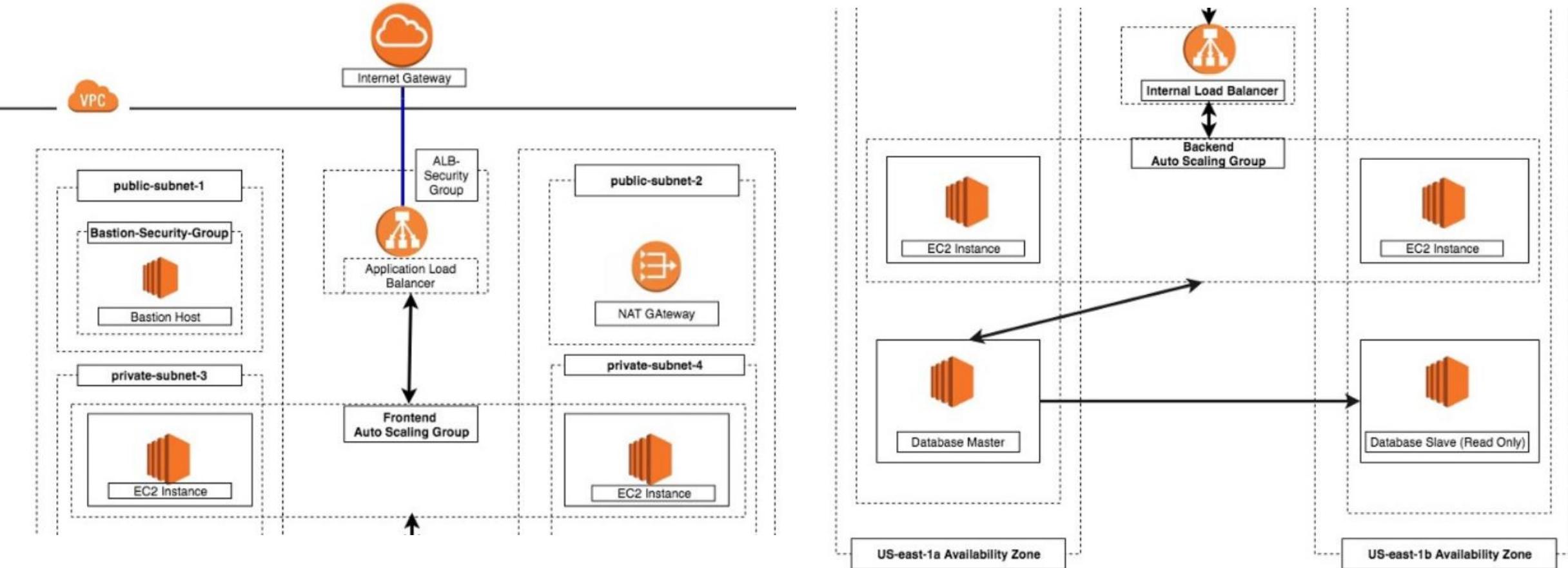
Architecture: Web, App, DB Tier



Multi-Tier HA Architecture



Multi-tier Architecture Solution





Access Services

Ways to Access AWS Resources



- Simple web-based user interface
- AWS has a different GUI for android and iOS to access some of the services like EC2, DynamoDB, ELB, Beanstalk, CloudWatch and many more
- Tool used to manage AWS resources and automates service management with scripts
- Mac, Linux and Windows OS supports CLI
- AWS SDKs provides an easy to use GUI to access and administer AWS infrastructure
- All major programming languages has compatibility with AWS SDK, including Java, .Net, PHP, Ruby, Python, Go, C++, Node.js and many more



Lab Activity Guide

Module on Portal

- | Module 1: Introduction To Cloud And AWS | |
|---|--|
| ● | Presentation : Introduction To AWS |
| ● | Lesson 1 : Module & Cloud Overview (06:35 min) |
| ● | Lesson 2 : Cloud Service Model IaaS, PaaS, SaaS & Deployment Model Public, Private, Hybrid (08:50 min) |
| ● | Lesson 3 : AWS Overview Comparison (05:02 min) |
| ● | Lesson 4 : AWS Global Infrastructure Region AZ (08:05 min) |
| ● | Lesson 5 : AWS Services (10:19 min) |
| ● | Lesson 6 : IAM Users, Groups, Policy, & Roles (10:59 min) |
| ● | Lesson 7 : Compute EC2, Lambda, ECS, EKS, & Fargate (08:22) |
| ● | Lesson 8 : Storage Service Block Object File S3, EBS, & EFS (07:40 min) |
| ● | Lesson 9 : Network Service VPC Subnet Gateway, LB, Route 53 & CDN (09:04) |
| ● | Lesson 10 : Database Service RDS, DynamoDB, ElastiCache, RedShift, & Aurora (06:46 min) |
| ● | Lesson 11 : Automation Configuration, CloudFormation, & OpsWorks (06:31 min) |
| ● | Lesson 12 : Audit And Monitoring CloudWatch, & CloudTrail (04:44 min) |
| ● | Lesson 13 : Application Services SNS, SES, SQS, & SWF (10:00 min) |
| ● | Lesson 14 : DevOps Tools, CodeCommit, CodeBuild, CodeDeploy, & CodePipeline (09:15 min) |
| ● | Lesson 15 : AWS Architecture Overview (06:22 min) |
| ● | Lesson 16 : Activity Guide (Lab) Overview & Module Wrap-Up |
| ● | FAQ's : AWS Batch 2011 Live Session Day 1 |
-
- | Module 2 : Create Cloud Account, Machine, And Install CLI | |
|---|--|
| ● | Lesson 0 : Module Overview (03:50 min) |
| ● | Lesson 1: Create AWS Free Trial Account (06:51 min) |
| ● | Activity Guide (Lab) : Create AWS Free Trial Account |
| ● | Lesson 2 : CloudWatch - Create Billings Alarm & Service Limits (07:12 min) |
| ● | Activity Guide (Lab) : CloudWatch - Create Billing Alarm & Service Limits |
| ● | Atul's Voice Note on AWS Billing |
| ● | Lesson 3 : Creating Windows Machine On AWS (16:39 min) |
| ● | Activity Guide (Lab) : Creating A Windows EC2 Instance |
| ● | Lesson 4 : Creating Linux Machine On AWS (16:22 min) |
| ● | Activity Guide (Lab) : Creating A Linux EC2 Instance |
| ● | Lesson 5 : Install CLI, GIT, Node JS AND SDK |
| ● | Activity Guide (Lab) : How To Use AWS CLI & Setup Git, Node.js & SDK |
| ● | Lesson 6 : Module Wrap-Up |

Register for Cloud Account



Register for AWS Free Tier Account Amazon Web Services & Login to AWS Console

[Edition 4]

[Last Update 20202]



Contents

1	Introduction.....	3
2	Documentation Links	4
3	Register For AWS Free Tier Account	5
4	Login To AWS Console	14
5	Summary.....	17

Cloud Watch: Billing Alarm & Limits



CloudWatch – Create Billings Alarm & Service Limits

[Edition 09]

[Last Update 210106]



Table of Contents

1	Introduction	3
2	Documentation Links	4
3	Creating Bill Alarm.....	5
4	Type Of Free Services	15
5	AWS Free Tier limits.....	16
5.1	Database Limits	16
5.2	Analytics Limits	17
5.3	Compute Limits.....	18
5.4	Storage Limits.....	19
6	Hourly Usage In The Amazon Web Services Free Tier	21
7	Summary.....	23

Create & Access: Windows Machine



Creating A Windows EC2 Instance

[Edition 03]
[Last Update 210104]



Table of Contents

1	Introduction.....	3
2	Documentation Links	4
3	Pre-requisite	5
4	Creating a Windows EC2 Instance	6
4.1	Launching the Windows Instance.....	6
4.2	Connecting to the Windows Instance.....	12
5	Configure an EC2 Windows Instance to allow file downloads using Internet Explorer..	17
6	Deleting/ Cleanup	24
6.1	Stopping the Windows Instance.....	24
6.2	Terminating the Windows Instance.....	25
6.3	Termination Prevention of Instance.....	26
7	Summary	28

Create & Access: Linux Machine



Creating a Linux Instance Using EC2

[Edition 05]
[Last Update 201202]



Contents

1	Introduction	3
2	Documentation Links	4
3	Launching a Linux Instance Using EC2	5
3.1	Creating an EC2 Instance	5
3.2	Accessing EC2 Instance Using Browser SSH Connection.....	11
3.3	Accessing EC2 Instance Using Putty.....	13
4	Deleting/Cleanup.....	22
4.1	Stopping the Linux Instance	22
4.2	Terminating the Linux Instance.....	23
5	Summary.....	26

Install CLI, GIT, NodeJS & SDK



How To Use AWS CLI & Setup Git, Node.js and SDK

[Edition 19]

[Last Update 210106]



Contents

1	Introduction	3
2	Documentation Links	6
3	Pre-requisite	7
4	Configure an EC2 Windows instance to allow file downloads using Internet Explorer.....	8
5	Installing AWS CLI	14
5.1	On Windows.....	14
5.2	On Amazon Linux	22
5.3	On macOS	22
6	Creating AWS Access Keys for AWS interaction via CLI	24
7	Configuring AWS CLI to access AWS services	31
8	Installing Git on ec2 instance.....	35
9	Installing Node js on ec2 instance	45
10	AWS SDK Setup.....	51
10.1	AWS SDK Installation	52
11	Testing SDK Program that file has been created in S3	58
12	Troubleshooting	62
12.1	Fatal: Destination Path	62
12.2	Git is Not Recognized.....	62
12.3	InvalidAccessKeyId	63
12.4	No Such Bucket	64
12.5	Set New Password And Generate New Secret Key For Existing IAM User	65
12.6	Unable to install AWS CLI on MAC	68
13	Summary	70

Find Us



<https://www.facebook.com/K21Academy>



<http://twitter.com/k21Academy>



<https://www.linkedin.com/company/k21academy>



<https://www.youtube.com/k21academy>



<https://www.instagram.com/k21academy>