AWS Cloud Practitioner

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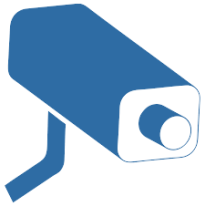
Introduction to AWS

Operational Excellence

Run, manage and monitor workloads with continuous improvement

Security



Protecting assets and information with risk assessment and unplanned failures

Reliability

Auto recover from infra or system failures while meeting operational thresholds

Performance Efficiency

Using computing resources efficiently to support on-demand changes

Cost Optimization

Avoid unnecessary cost or replace with cost-effective solutions while meeting best practices and business needs

Compute in the Cloud

EC2 | Pricing | Scaling | Load Balancing | Additional Services

Amazon
EC2

Elastic Cloud Compute (EC2) is a **highly configurable virtual server.**
EC2 is a resizable **compute capacity**. It takes **minutes** to launch new instances
Anything and everything on AWS uses EC2 instances underneath

- Choose OS via **AMI**
- Choose **Instance Type**
- Add Storage **(EBS, EFS)**
- Configure Instance

Red Hat ubuntu Windows Server amazon Linux

t2.nano
$0.0065/hour ($4.75/month)
1 vCPU 0.5GB Mem

C4.8xlarge
$1.591/hour ($1161.43/month)
36 vCPU 60GB Mem 10 Gigabit performance

SSD **HDD** **Multiple Volumes**

Security groups, Key Pairs, User-Data, IAM Roles, Placement Groups

Compute in the Cloud

EC2 | **Pricing** | Scaling | Load Balancing | Additional Services

Instance Families:
Are different combinations of CPU, Memory, Storage and Networking capacity.

General Purpose: balance of compute, memory and networking *(web servers and code repos)*

Compute Optimized: Ideal for applications that benefit from high performance processors *(scientific modeling, dedicated gaming servers, ad engines)*

Memory Optimized: workloads that process large data sets *(real- time big data)*

Accelerated Optimized: hardware accelerators and co-processors *(ML, bitcoin mining, speech recognition)*

Storage Optimized: high sequential read and write access (*in-memory transactions)*

Pricing: There are 5 different ways

Least Commitment

On-Demand

- Low cost, pay per hour or second
- Short-term, unpredictable workloads

Biggest Savings

Spot up to 90%

- Request spare capacity
- Can handle interruptions, non-critical tasks

Best Long-term

Reserved up to 75%

- Steady state or predictable usage
- Commit to 1or 3 yr term
- Can resell unused

Most Expensive

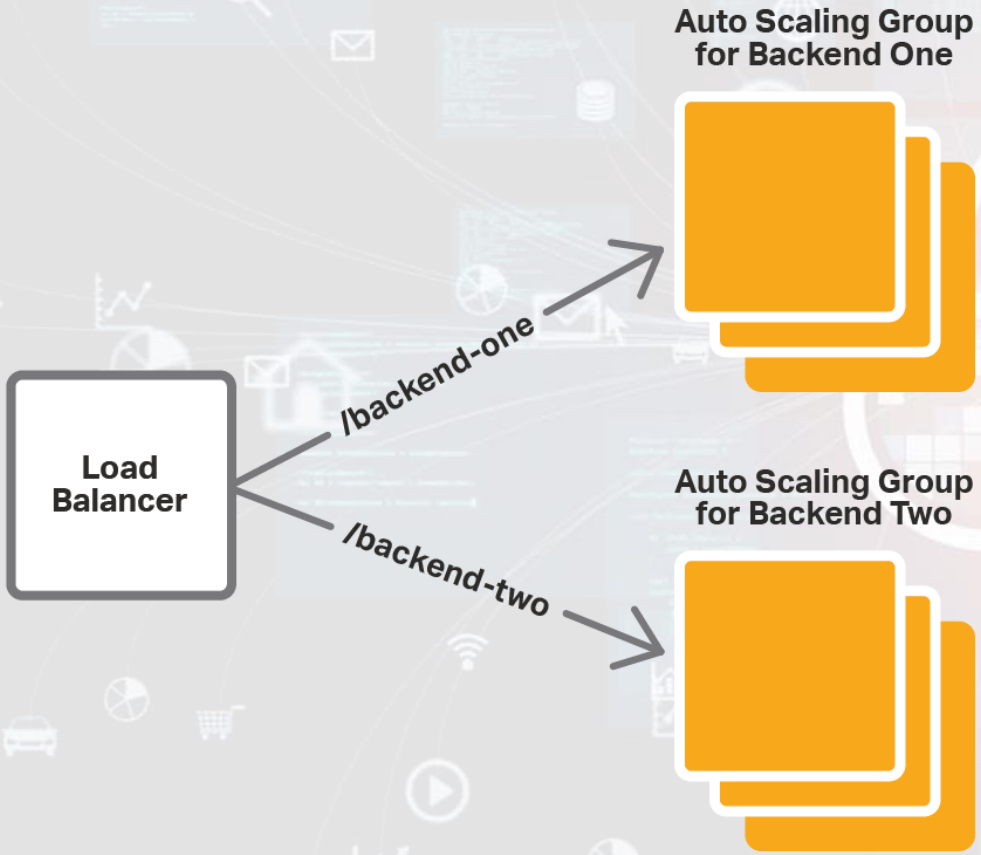
Dedicated

- Dedicated servers
- When a guaranteed isolated server is needed

AWS Savings Plan is another way but can be used for more than EC2

Compute in the Cloud

EC2 | Pricing | **Scaling | Load Balancing** | Additional Services

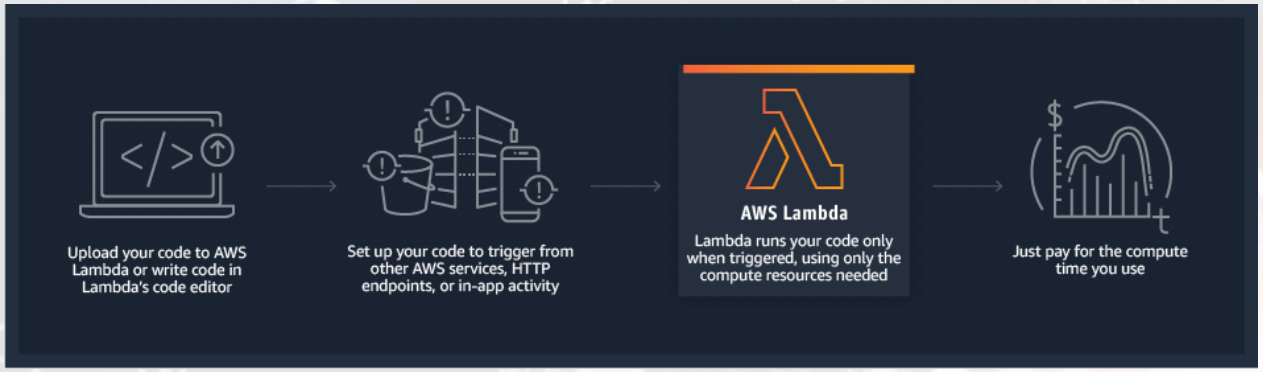


EC2 Auto Scaling helps in maintaining application availability and allows automatic addition/removal of EC2 instances according to defined conditions (min/desired/max)

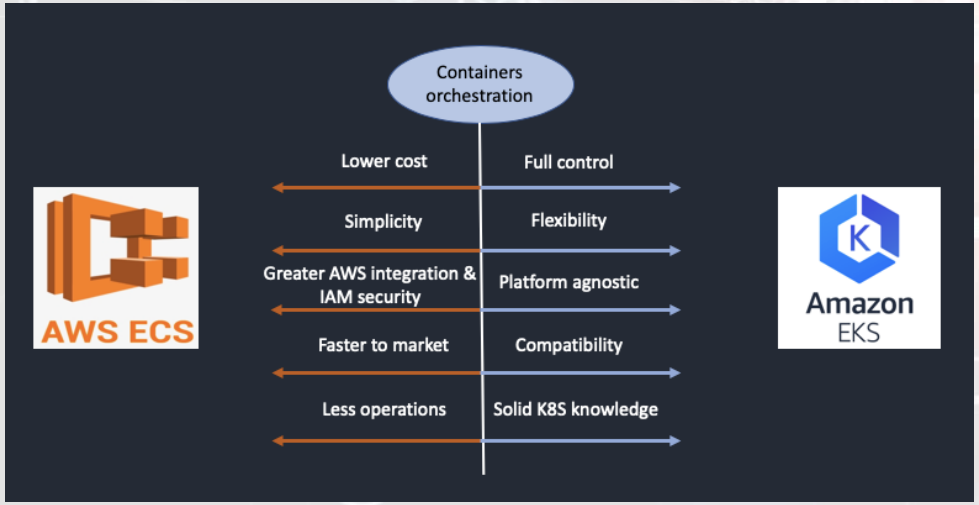
Elastic Load Balancing (ELB) automatically distributes incoming application traffic across multiple targets and virtual appliances in one or more Availability Zones (AZs).
Can be used with Applications/ Gateway/ Network

Compute in the Cloud

EC2 | Pricing | Scaling | Load Balancing | **Additional Services**



Lambda
A service which allows running of code without needing to provision or manage servers



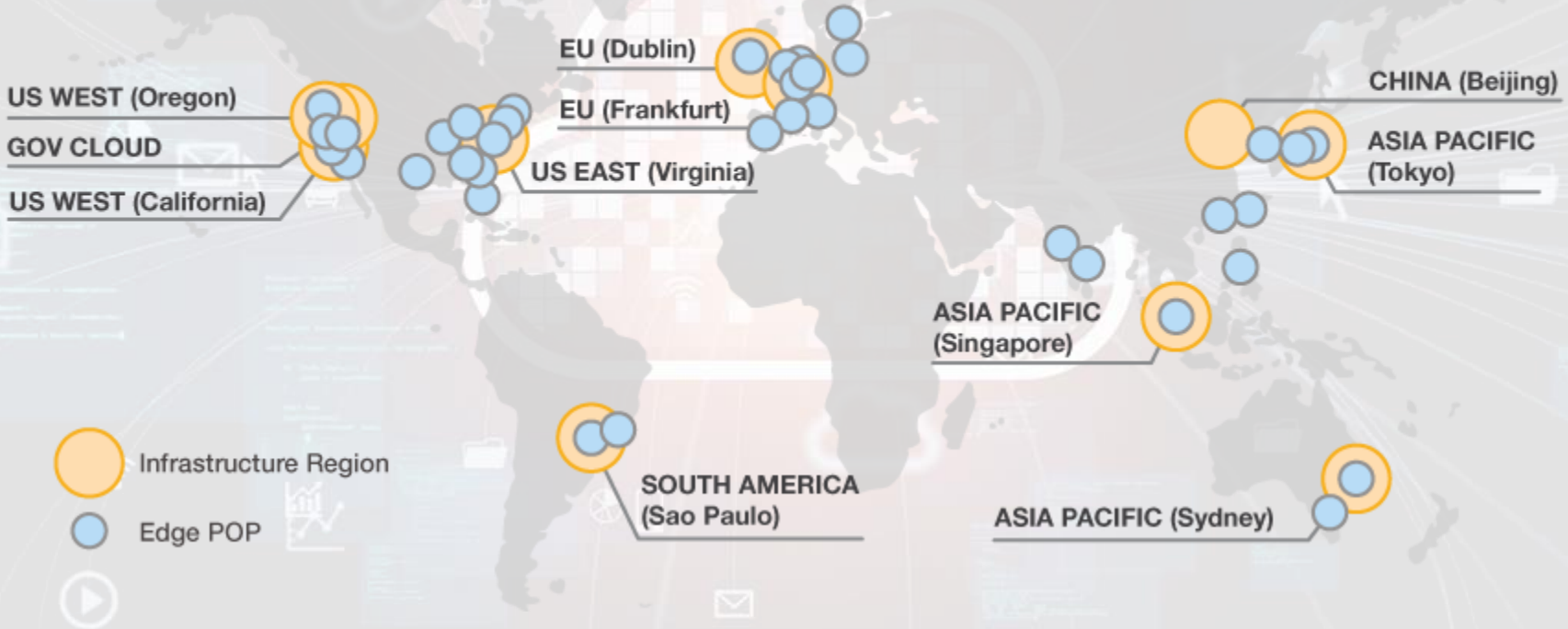
Elastic Container Service is a highly scalable high-performance container management system that enables running and scaling of containerized applications

Elastic Kubernetes Service can be used to run Kubernetes on AWS

Fargate Is a serverless compute engine for containers. It manages the server infrastructure.

Global Infra and Reliability

Region | Availability Zones | Edge Locations



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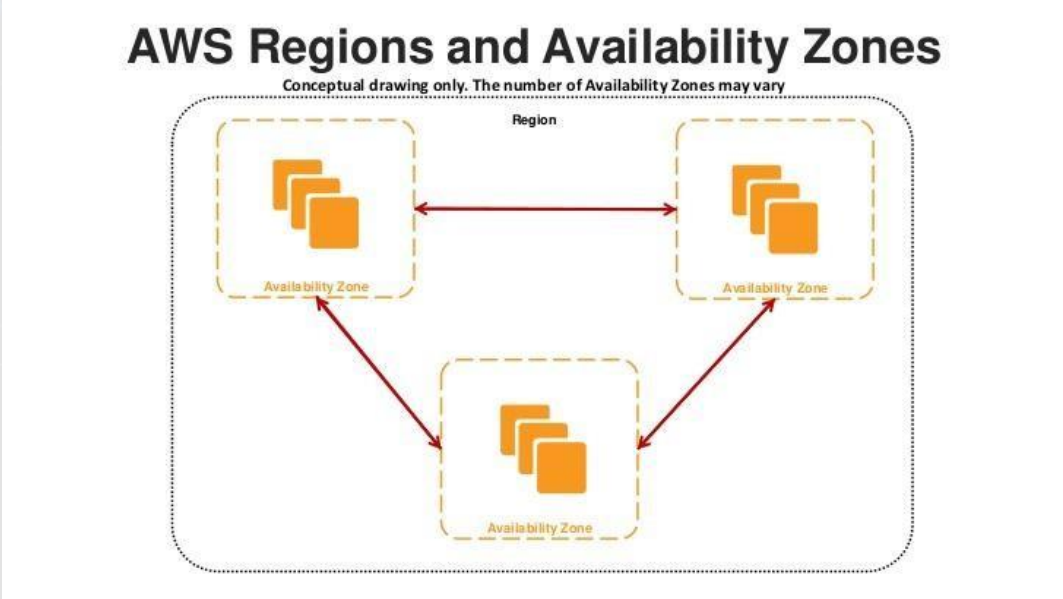
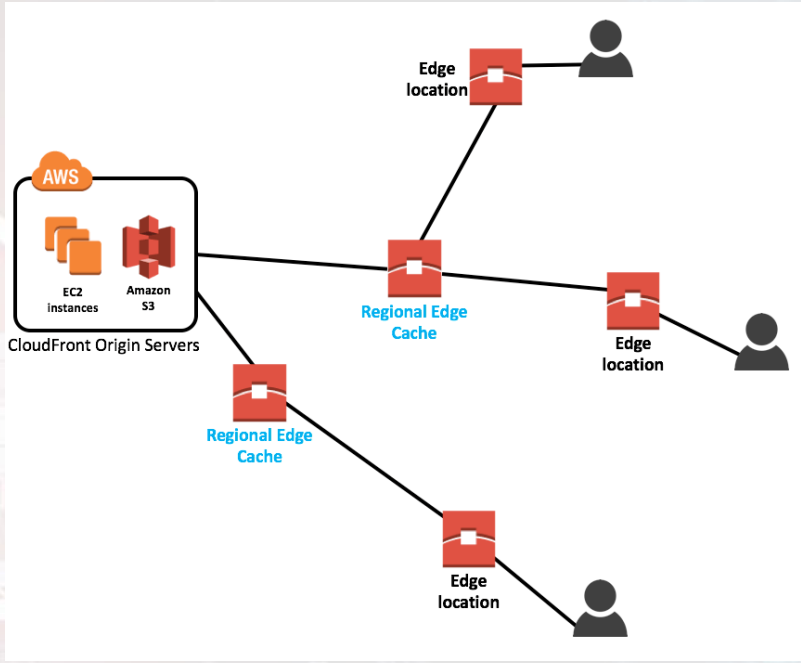


A **Region** is a physical location around the world where clusters of data centers are present.

An **Availability Zone** is one or more discrete data centers with redundant power, networking, and connectivity in an AWS Region.

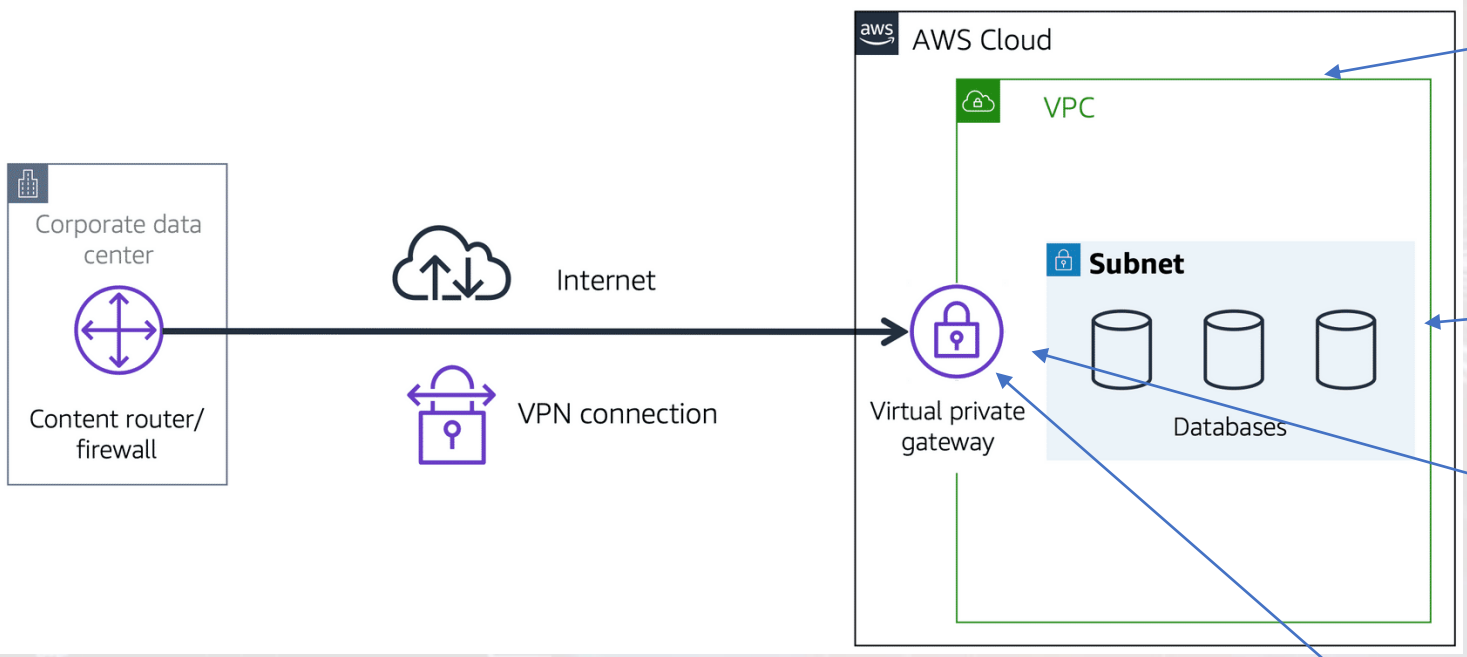


Edge locations are data centers designed to deliver services with the lowest latency as possible. They're closer to users than Regions and AZs.

Servers which use Edge are:
CloudFront, Route 53, AWS Shield.

Networking

Connectivity | Subnets and NACLs | Global Networking



A Network Service that can establish boundaries around AWS Resources is called a **Virtual Private Cloud**

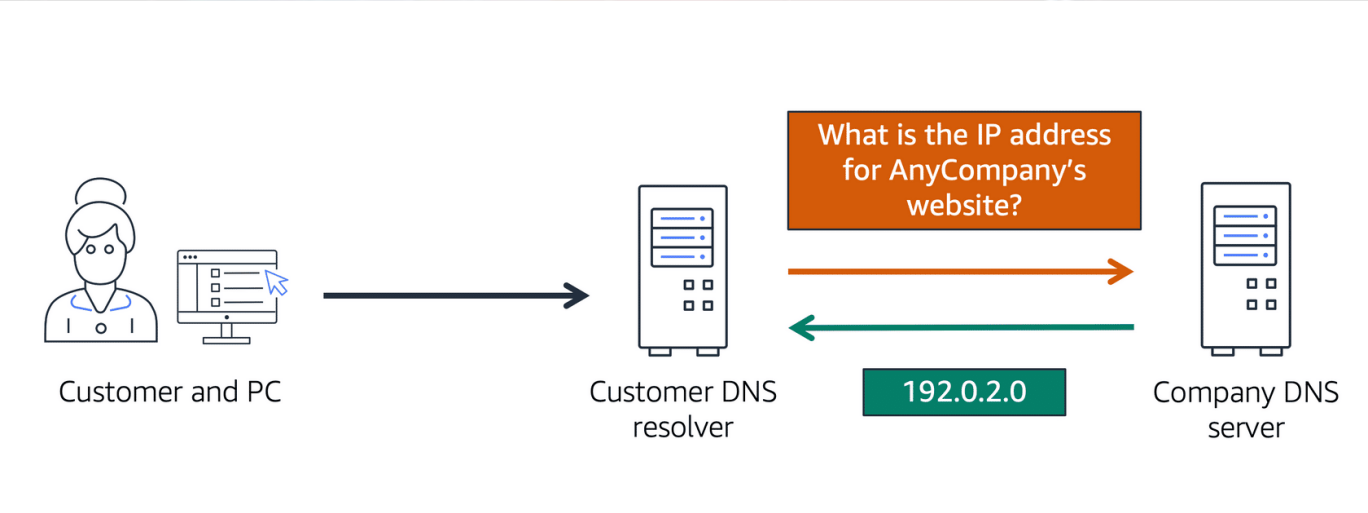
A **subnet** is a section of a VPC in which you can group resources based on security or operational needs.

A **network access control list** (ACL) is a virtual firewall that controls inbound and outbound traffic at the subnet level.

Accessing the VPC is done through an **Internet Gateway** and if accessing private resources then a **Virtual Private Gateway** is used

Networking

Connectivity | Subnets and NACLs | **Global Networking**



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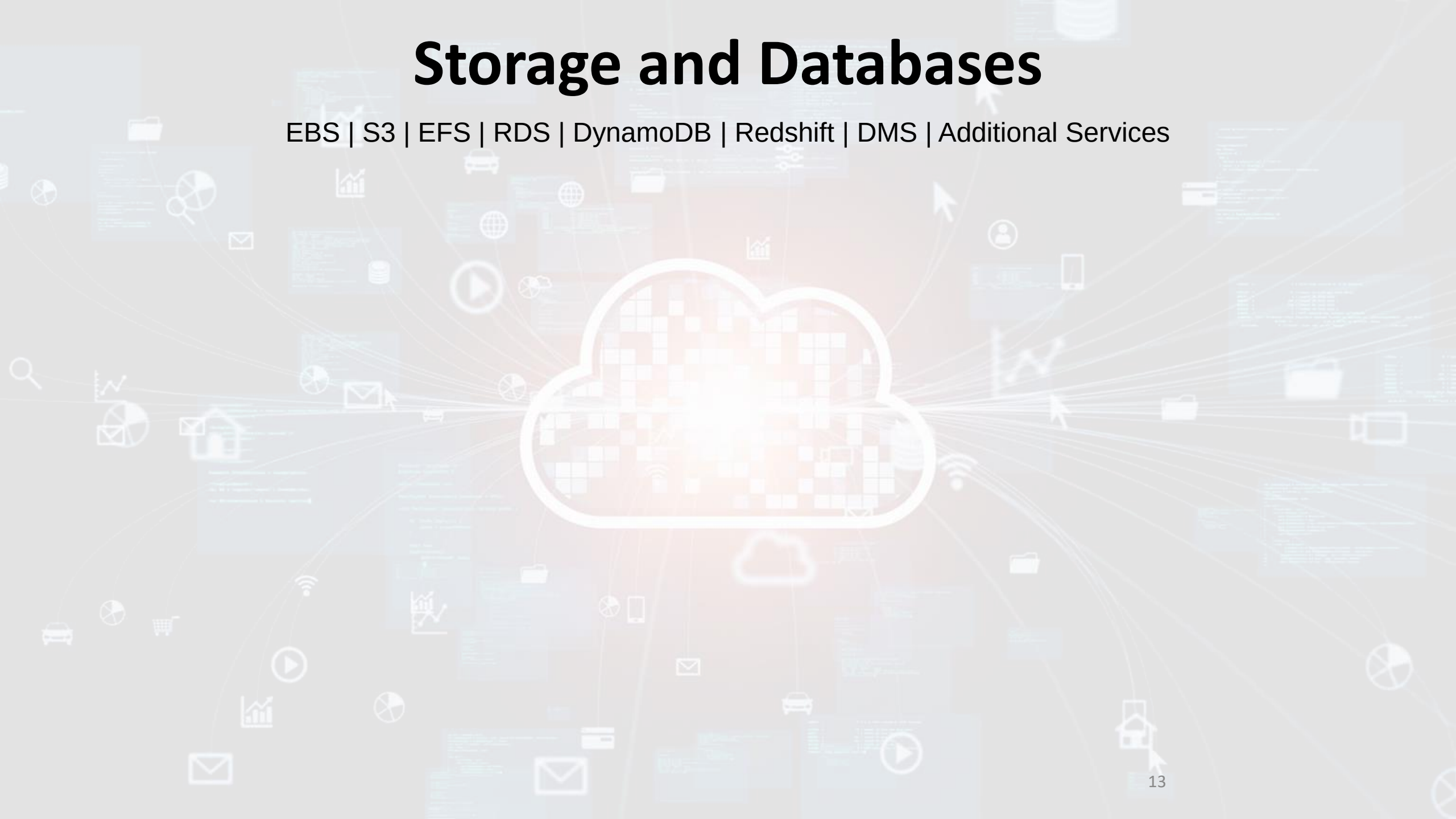
Storage and Databases

EBS | S3 | EFS | RDS | DynamoDB | Redshift | DMS | Additional Services

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