



AWS 101

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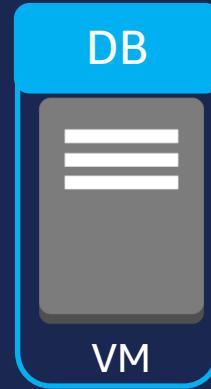
Get the basics of the AWS Platform

Doron Rogov

Technical Trainer, Amazon Web Services



VM





Make it Cloud

AWS Global Infrastructure

Regions

- Geographic locations
- Consist of at least two Availability Zones

Availability Zones

- Clusters of data centers
- Isolated from failures in other Availability Zones



Region & Number of Availability Zones

● New Region (coming soon)

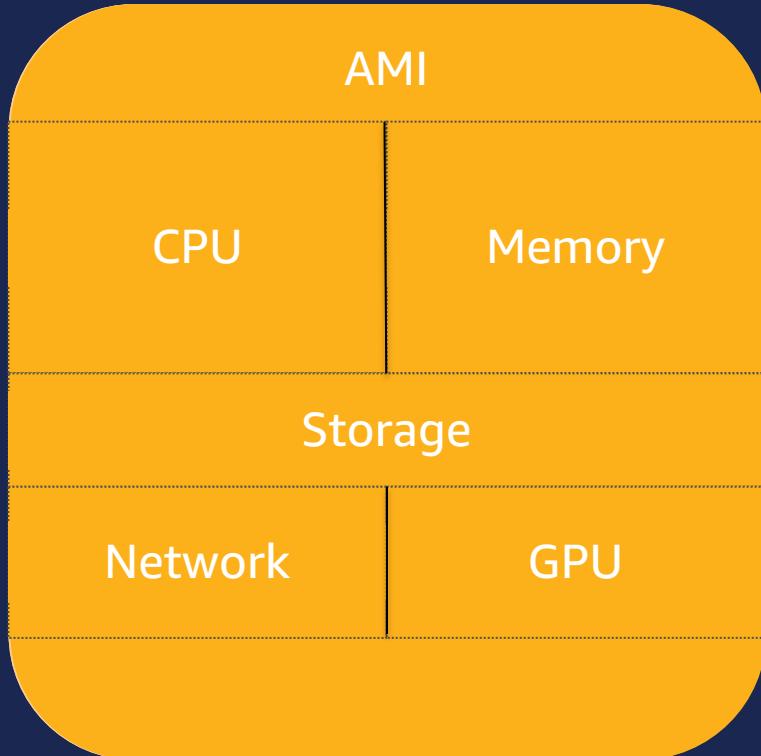
Amazon Elastic Compute Cloud (EC2)



Amazon
EC2

- **Resizable** compute capacity
- Complete control of your computing resources
- **Reduced time required** to obtain and boot new server instances

The inside of an Instance



CPU	Sockets, number of cores, clock frequency, bursting capability
Memory	Memory capacity
Disks	Input / output operations per second, throughput
Network Interface	Max bandwidth, packet rate

AWS Marketplace – IT Software Optimized for the Cloud

- Online store to discover, purchase, and deploy IT software on top of the AWS infrastructure.
- Catalog of **nearly 4000** IT software solutions including Paid, BYOL, Open Source, SaaS, and free-to-try options.
- Pre-configured to operate on AWS.
- Software checked by AWS for security and operability.

The screenshot shows the AWS Marketplace interface. At the top, there's a search bar with "AMI & SaaS" selected, a magnifying glass icon, and navigation links for "Sell in AWS Marketplace", "Amazon Web Services Home", and "Help". Below the search bar, a breadcrumb trail shows "All Categories (3997 results) showing 1 - 10". On the left, a sidebar titled "Categories" lists "All Categories", "Software Infrastructure (3132)", "Developer Tools (742)", and "Business Software (1590)". It also includes sections for "Filters", "Operating System" (with links for All Windows, All Linux/Unix), "Software Pricing Plans" (Free, Hourly, Monthly, Annual, Bring Your Own License), "Show more", "Support" (Product Support Connection, Software Free Trial), "Delivery Method" (Amazon Machine Image, CloudFormation Stack, SaaS), and "Average Rating" (5 star, 4 star, 3 star, 2 star, 1 star). The main content area displays several software offerings:

- CentOS 7 (x86_64) - with Updates HVM**: 5 stars (50), Version 1801_01, Sold by Centos.org. Description: This is the Official CentOS 7 x86_64 HVM image that has been built with a minimal profile, suitable for use in HVM instance types only. The image contains just enough packages... (Linux/Unix, CentOS 7 - 64-bit Amazon Machine Image (AMI))
- TERADATA**: Teradata Database Enterprise. 5 stars (1), Version 16.10.00.10-1, Sold by Teradata. Description: Starting from \$0.90/hr or from \$6,048.00/yr (23% savings) for software + AWS usage fees. Flagship data warehouse software featuring Teradata Active System Management and no system concurrency limit. Customers get quick time to value and low total cost of ownership.... (Linux/Unix, Other kernel-default-3.0.101-0.132.TDC.1.R.0 - 64-bit Amazon Machine Image (AMI))
- WordPress Certified by Bitnami**: 5 stars (23), Version 4.9.4-2 on Ubuntu 16.04, Sold by Bitnami. Description: Wordpress powers over 25% of all websites on the internet, making it the world's most popular blogging and content management platform. It is free and open source software.... (Linux/Unix, Ubuntu 16.04 - 64-bit Amazon Machine Image (AMI))
- CentOS 6 (x86_64) - with Updates HVM**: 5 stars (33), Version 1801_01, Sold by Centos.org. Description: This is the Official CentOS 6 x86_64 HVM image that has been built with a minimal profile. The image contains just enough packages to run within AWS, bring up an SSH Server.... (Linux/Unix, CentOS 6 - 64-bit Amazon Machine Image (AMI))
- Debian GNU/Linux 8 (Jessie)**: 5 stars (522).

Type and size

Instance generation

Instance family

Instance size

r4.large

Amazon EC2 Instance Types

General Purpose	Compute Optimized	Memory Optimized	Accelerated Computing Instances	Storage Optimized
T2	C5	X1e	P3	H1
M5	C4	X1	P2	I3
M4	R4	G3	F1	D2

Amazon EC2 Purchasing Options

On-Demand



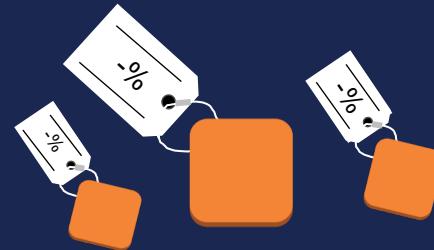
Pay-as-you-go,
by the ~~hour~~
Second!

Reserved Instances



Purchase, at a
significant **discount**,
instances that are
always available

Spot Instance



spare compute
capacity in the AWS
cloud available to
you at **steep
discounts**

Auto Scaling



Auto
Scaling

- **Scale your Amazon EC2 capacity automatically**
- Well-suited for applications that experience **variability in usage**
- Available at no additional charge

Auto Scaling Benefits

Better Fault Tolerance



Better Availability



Better Cost Management



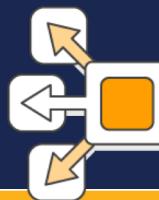
Elastic Load Balancing



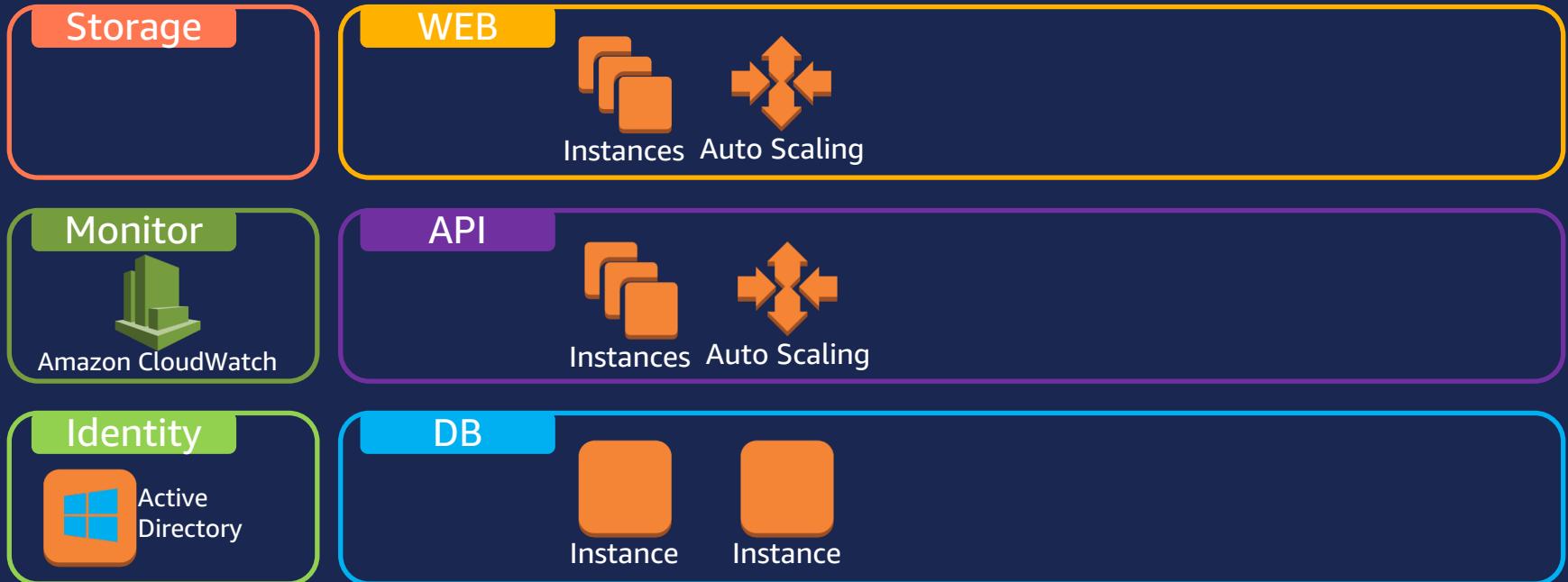
Elastic Load
Balancing

- **Distributes** traffic across multiple EC2 instances, in multiple Availability Zones
- Supports **health checks** to detect unhealthy Amazon EC2 instances
- Supports the **routing and load balancing** of HTTP, HTTPS, SSL, and TCP traffic to Amazon EC2 instances

Comparison of Elastic Load Balancing



Feature	Application Load Balancer	Network Load Balancer	Classic Load Balancer
Protocols	HTTP, HTTPS	TCP	TCP, SSL, HTTP, HTTPS
Platforms	VPC	VPC	EC2-Classic, VPC
Load Balancing to multiple ports on the same instance	✓	✓	
Path-Based Routing	✓		
Static IP		✓	



Managed Services

Amazon Virtual Private Cloud (VPC)



Amazon
VPC

- Provision a **private, isolated virtual network** on the AWS cloud.
- Have complete control over your virtual networking environment.

Amazon Relational Database Service (RDS)



Amazon
RDS

- Cost-efficient and **resizable capacity**
- Manages time-consuming **database administration** tasks, like:
 - Backups
 - Updates
 - Failover

Amazon RDS

- Simple and **fast to deploy**
- Manages common database administrative tasks
- **Compatible** with your applications
- Fast, predictable performance
- Simple and **fast to scale**
- Secure
- Cost-effective

Amazon
Aurora



postgre_{SQL}

MySQL®

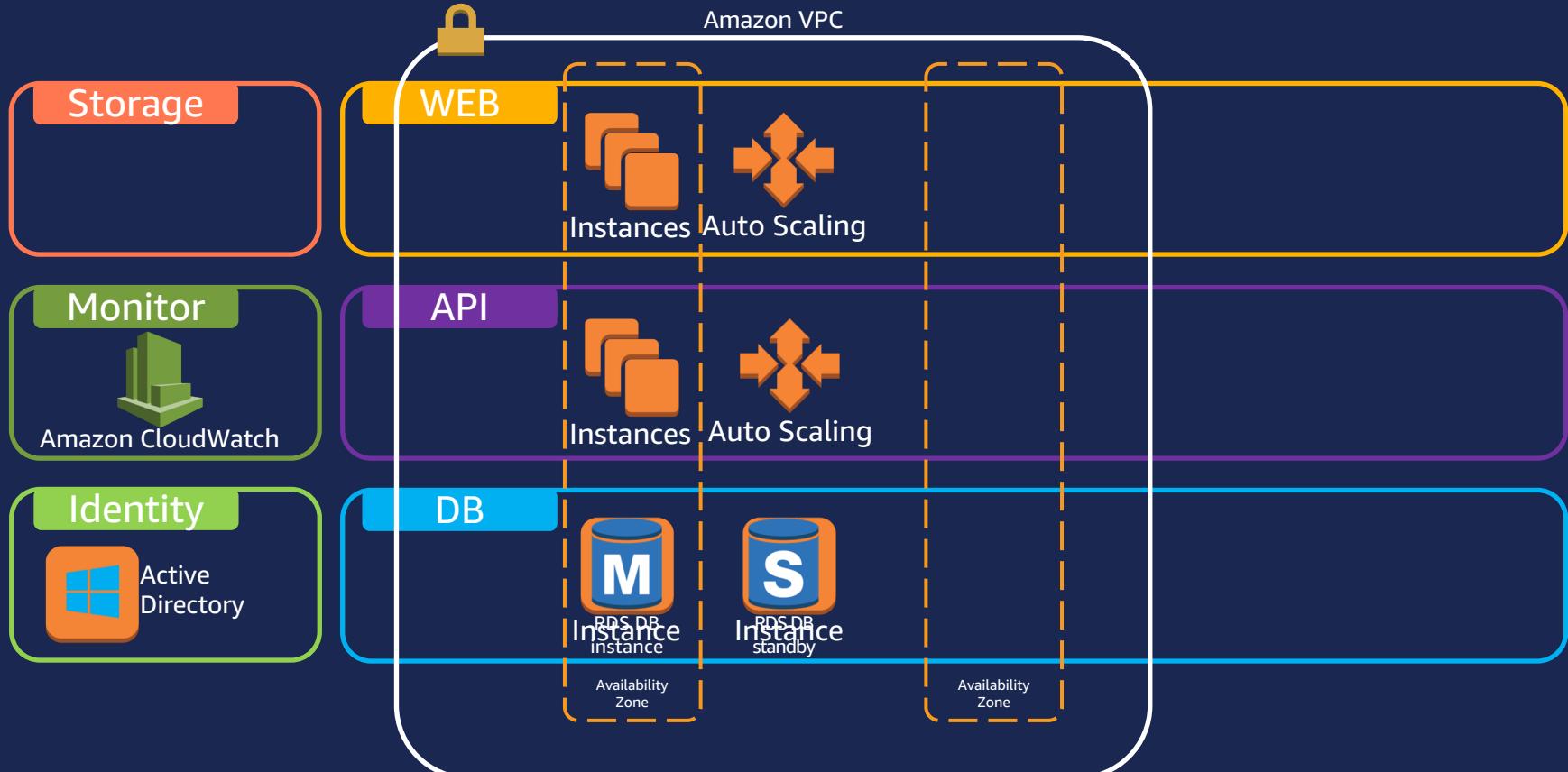
ORACLE®

Microsoft
SQL Server

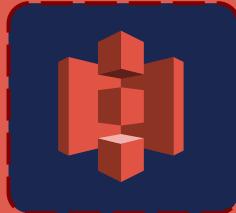
The MariaDB logo features a white seal or sea lion icon swimming to the left, with the word "MariaDB" in blue text to its right.



Amazon VPC



Amazon Simple Storage Service (S3)



Amazon S3

- Storage for the Internet
- Natively online, HTTP access
- Storage that allows you to store and retrieve **any amount of data**, any time, from anywhere on the web
- **Highly scalable**, reliable, fast and durable

Object

An object key is the unique identifier for an object in a bucket.

<https://not-taken.s3.amazonaws.com/AWS-TLV-Summit-2018.html>

Bucket

Object/Key

Amazon S3 Storage Classes

Storage Class	Durability	Availability	Other Considerations
Amazon S3 Standard	99.99999999%	99.99%	
Amazon S3 - Infrequent Access (IA)	99.99999999%	99.9%	<ul style="list-style-type: none">• Retrieval fee associated with objects• Most suitable for infrequently accessed data
Glacier	99.99999999%	99.99% (once restored)	<ul style="list-style-type: none">• Not available for real-time access• Must restore objects before you can access them• Restoring objects can take 3-5 hours

AWS Identity and Access Management (IAM)



AWS IAM

1

Manage AWS IAM users
and their access

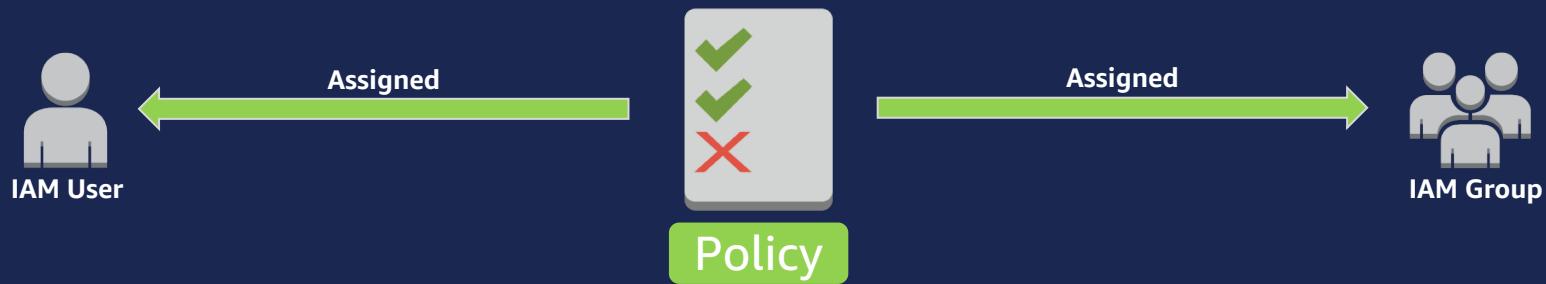
2

Manage AWS IAM roles
and their permissions

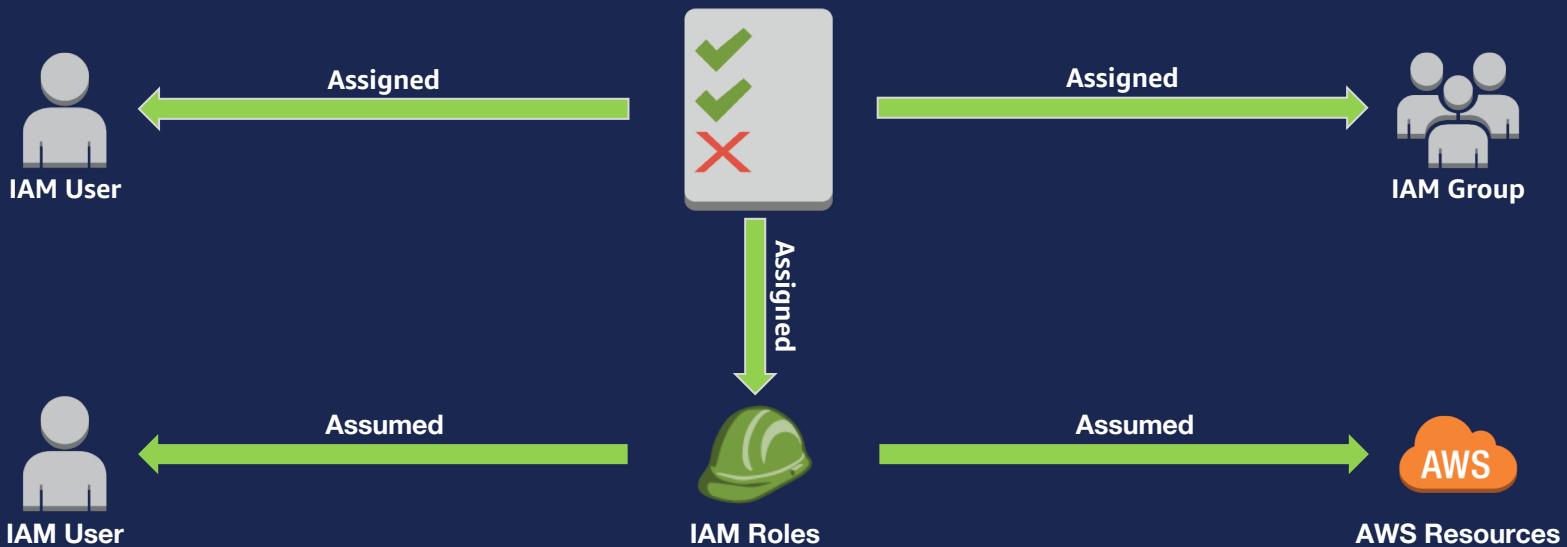
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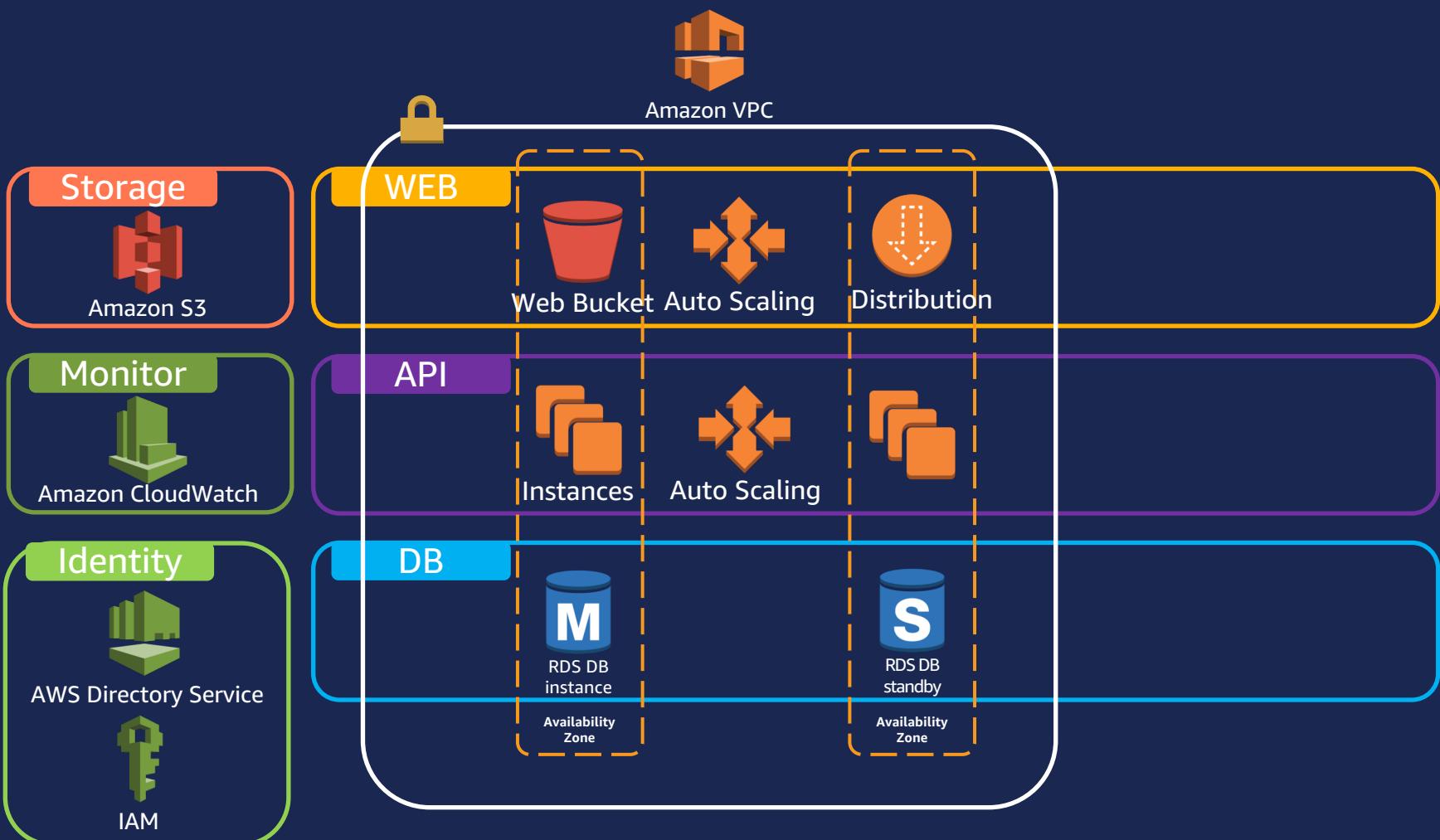
Manage federated users
and their permissions

AWS IAM Policy Assignment



AWS IAM Policy Assignment

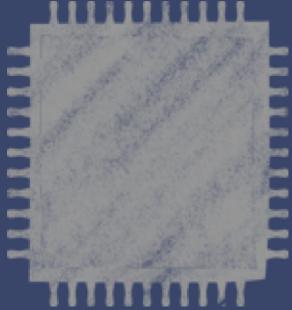




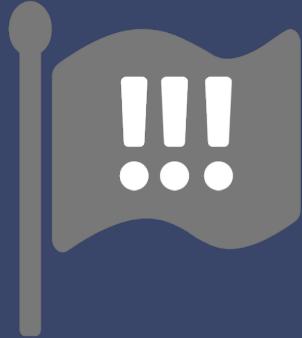
Serverless all the way

AWS Lambda

Compute service



Event driven



Run arbitrary code
without managing
servers.

Code only runs
when it needs to
run.

Using AWS Lambda



Bring your own code

- Java, Node.js, C#, Python and Go
- Bring your own libraries (even native ones)



Simple resource model

- Select power rating from 128MB to 3 GB
- CPU and network allocated proportionately



Flexible use

- Synchronous or asynchronous
- Integrated with other AWS services



Flexible authorization

- Securely grant access to resources and VPCs
- Fine-grained control for invoking your functions

Application components for serverless apps

EVENT SOURCE



Changes in
data state



Requests to
endpoints



Changes in
resource state



FUNCTION



Java
Node.js
C#
Python
Go

SERVICES (ANYTHING)



Amazon API Gateway



Amazon API
Gateway



Low Cost and
Efficient



Performance
at Any Scale



Easily Monitor
API Activity



Create RESTful
Endpoints for
Existing Services

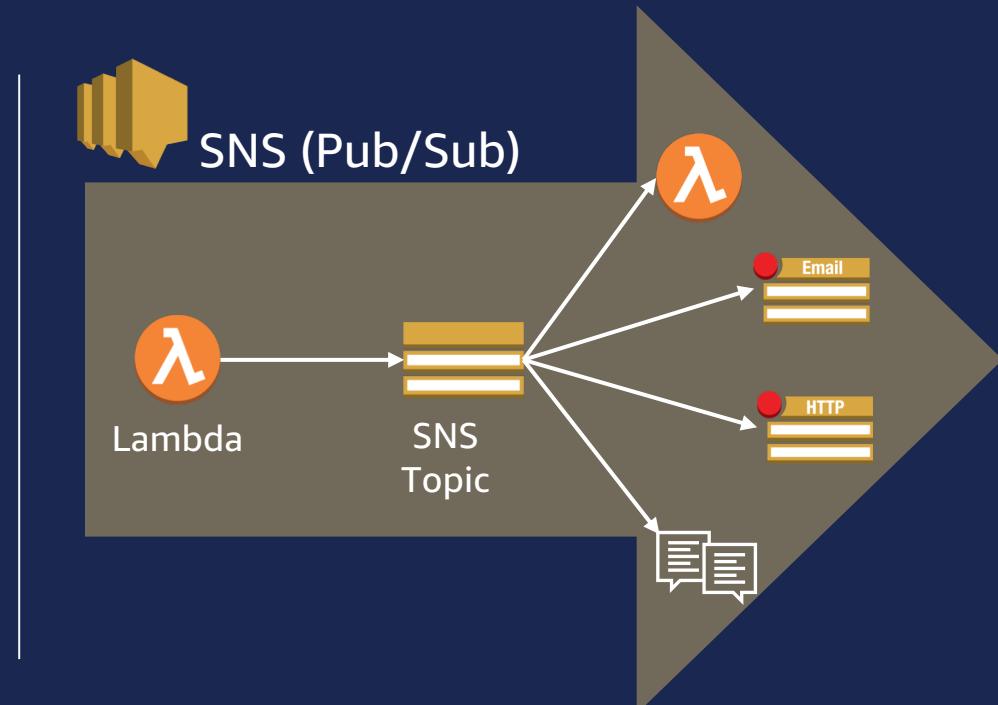
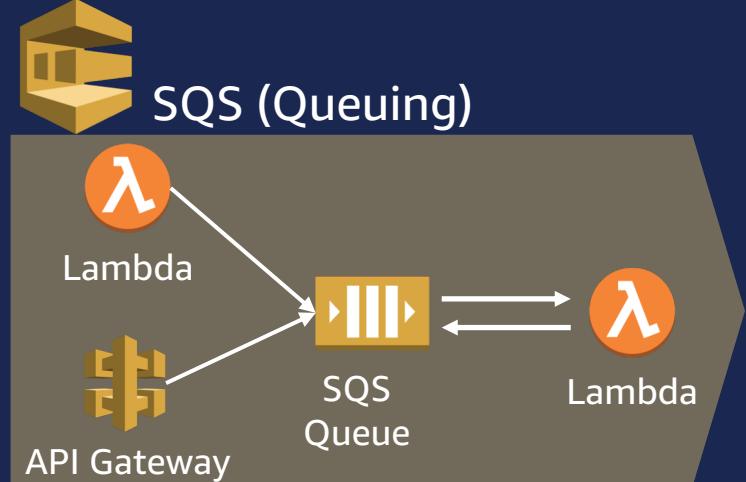


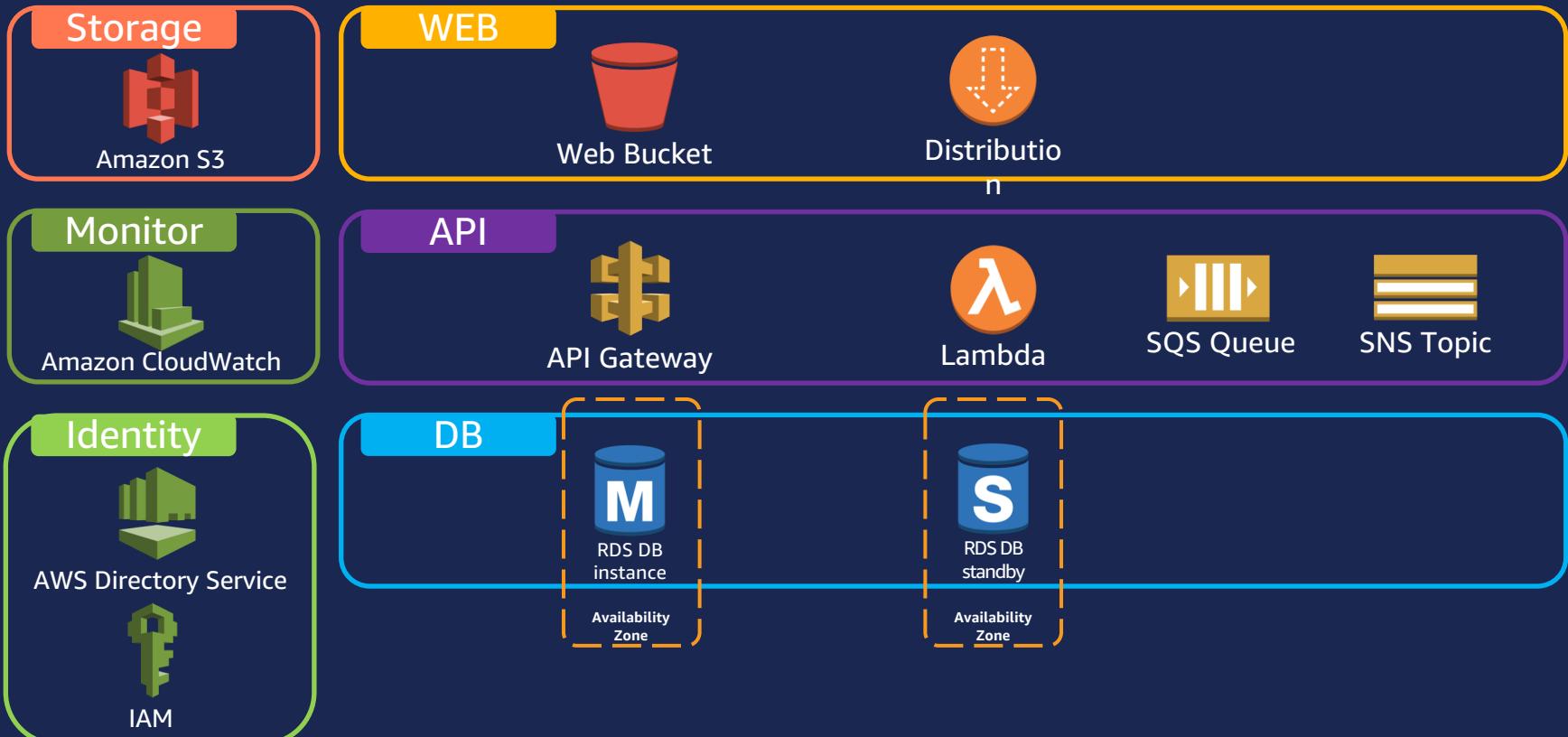
Streamline API
Development



Run Your APIs
Without
Servers

Decoupled Communication





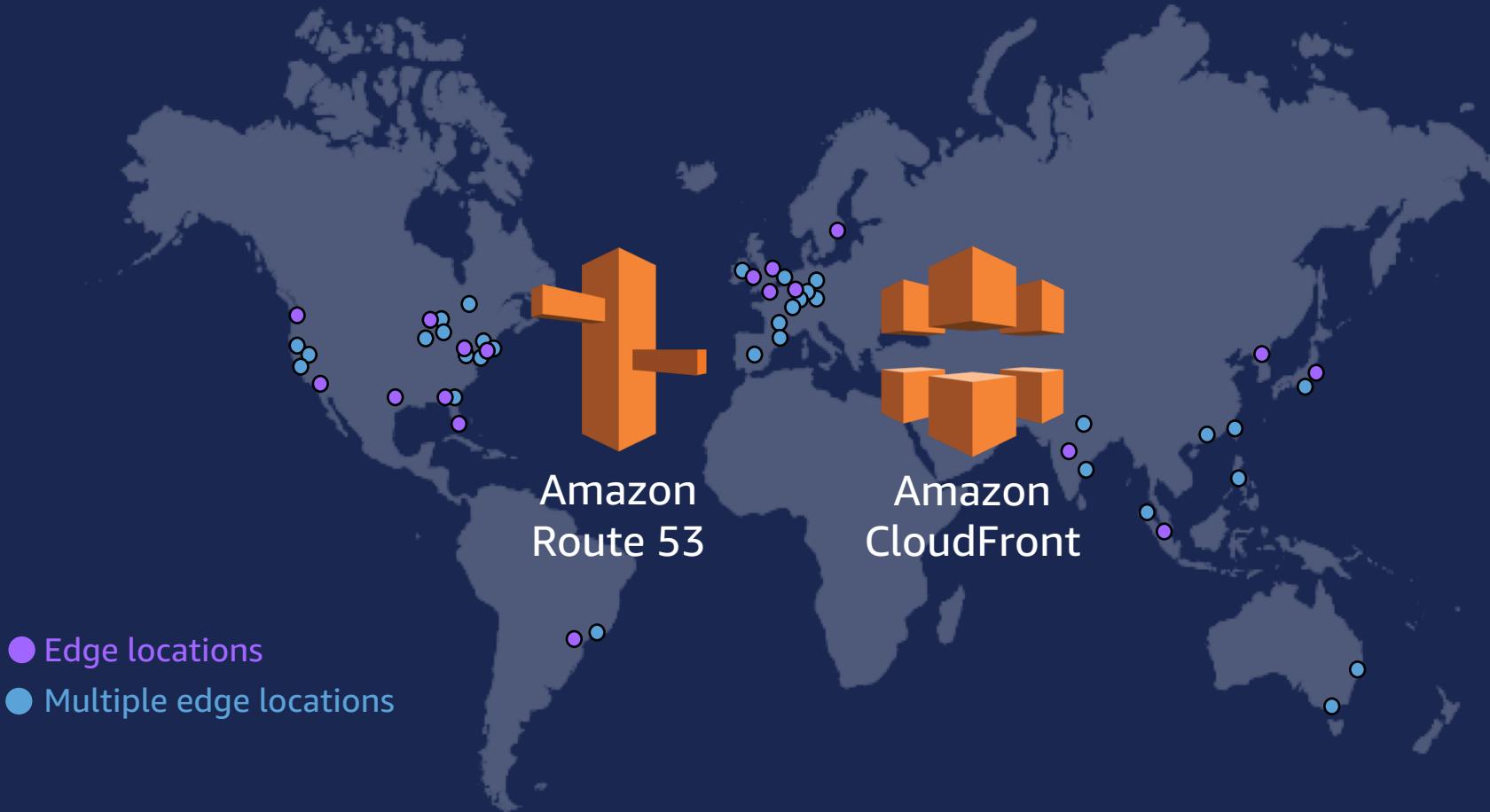
Amazon DynamoDB

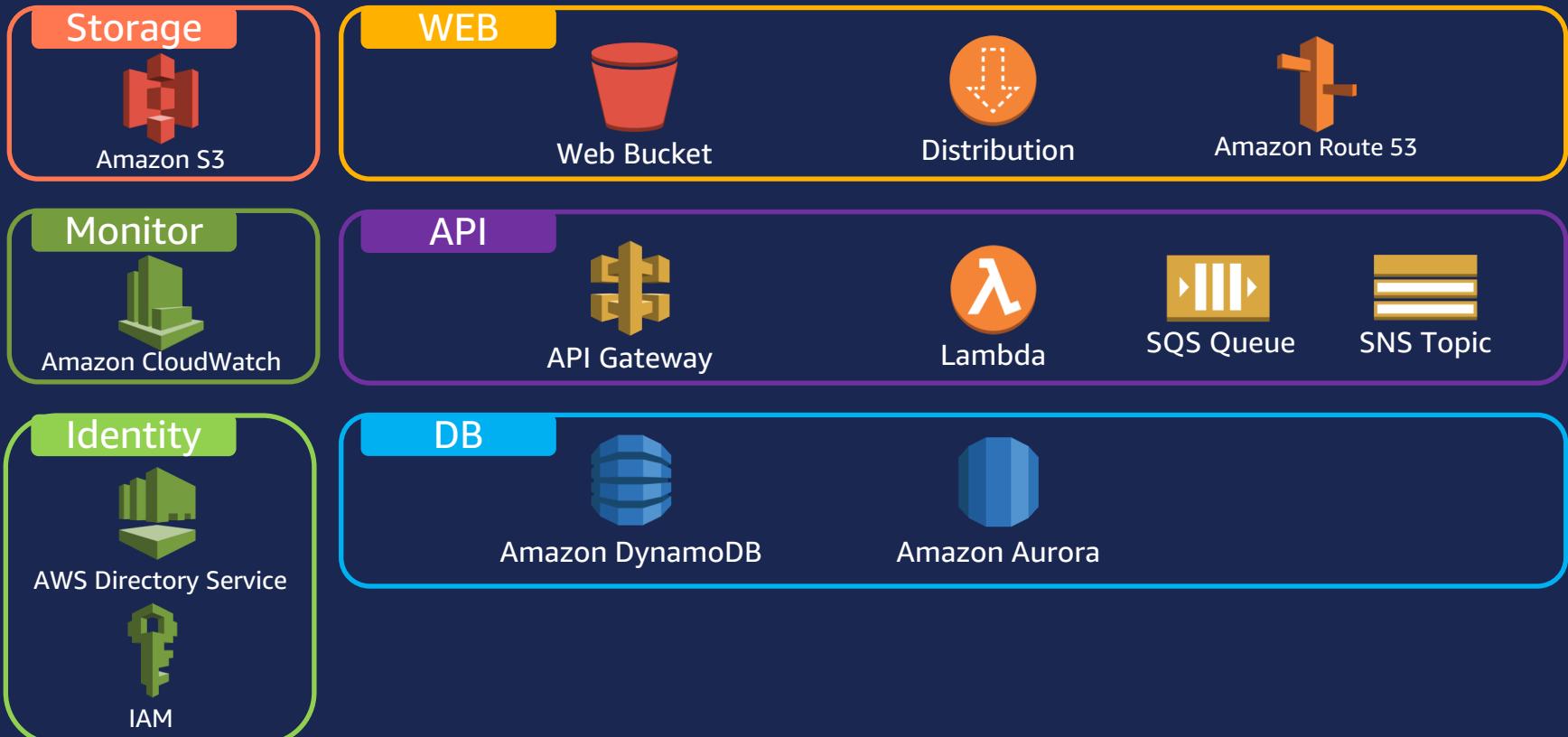


Amazon
DynamoDB

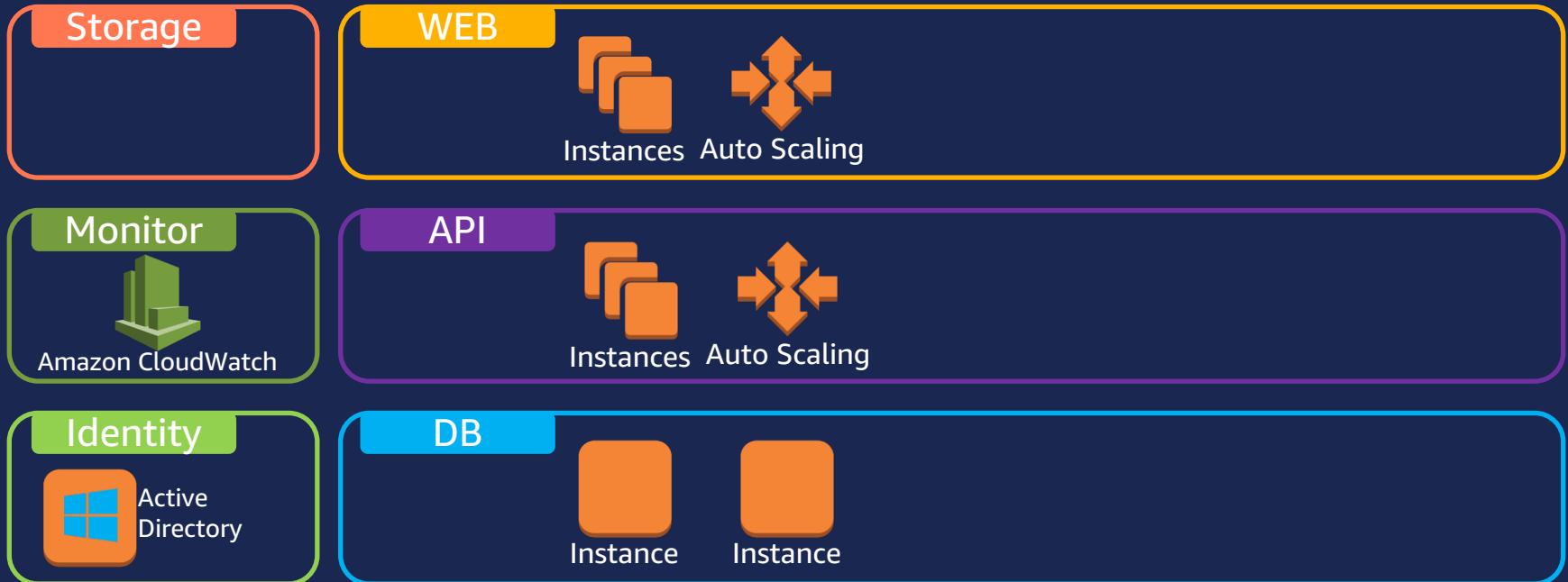
- Unlimited Storage
- Fast, Consistent Performance
- **Fully Managed, NoSQL** database service
- Highly Scalable, Flexible
- Event Driven Programming
- Fine-grained Access Control

Amazon Route 53, Amazon CloudFront & Edge Locations



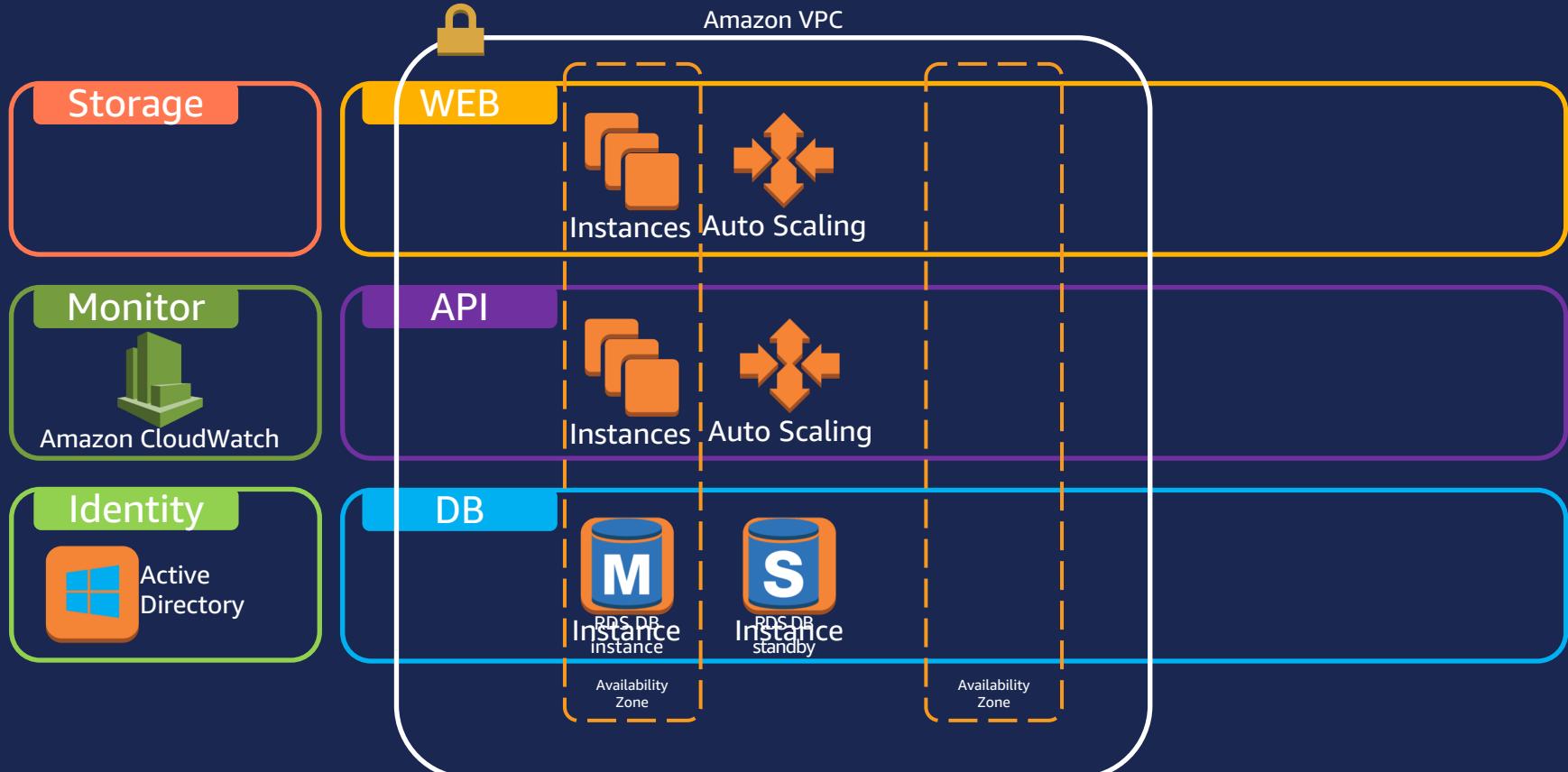


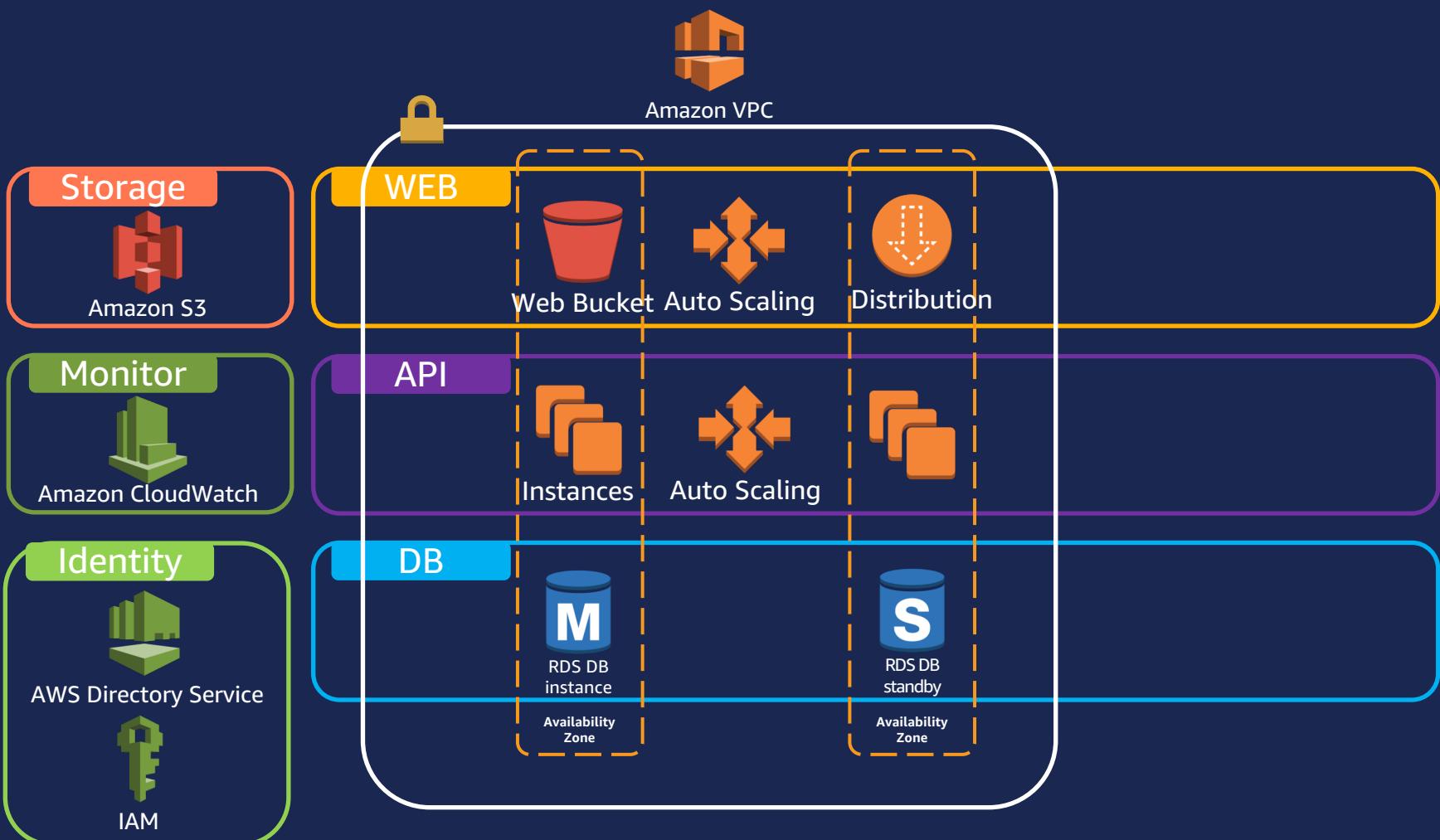
From the top...

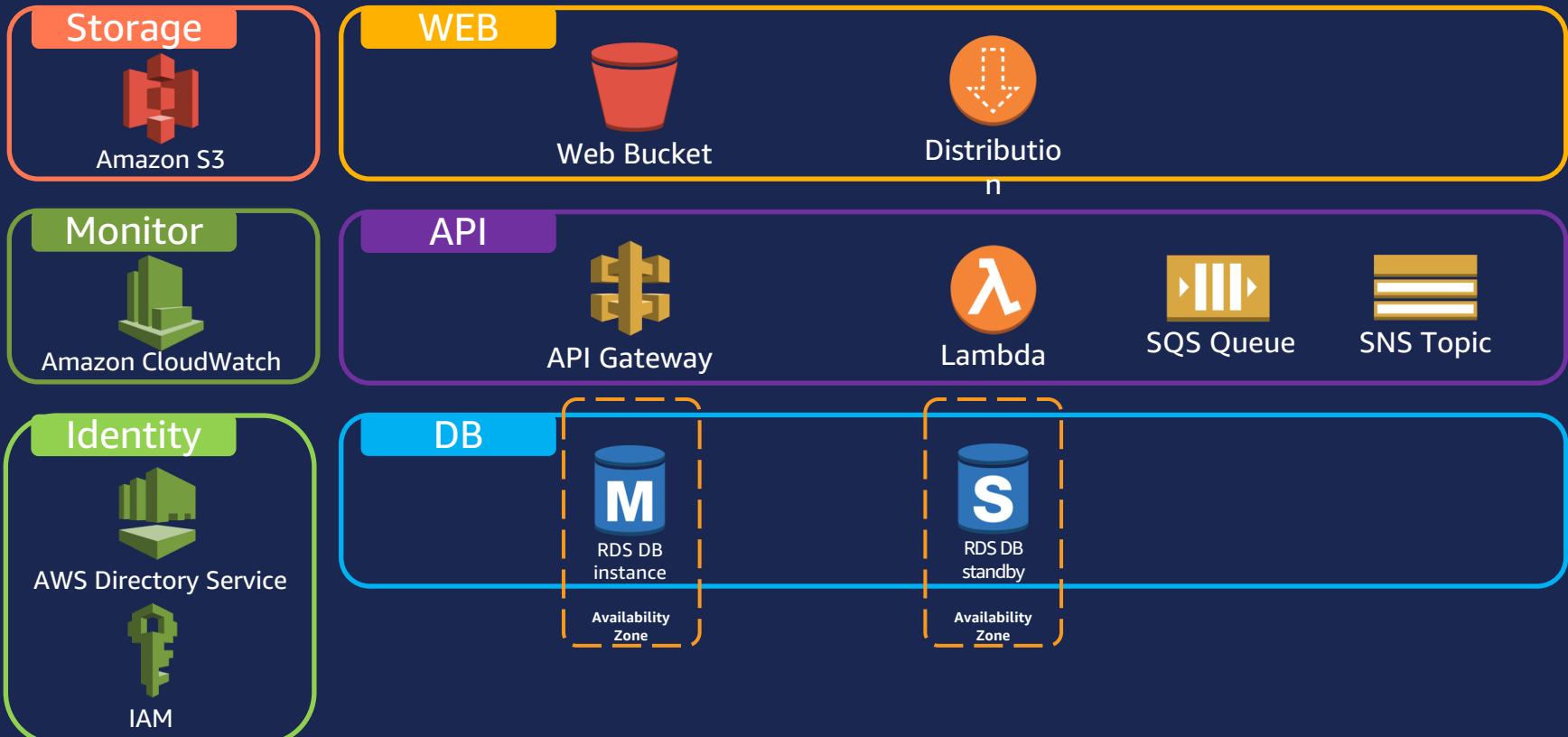


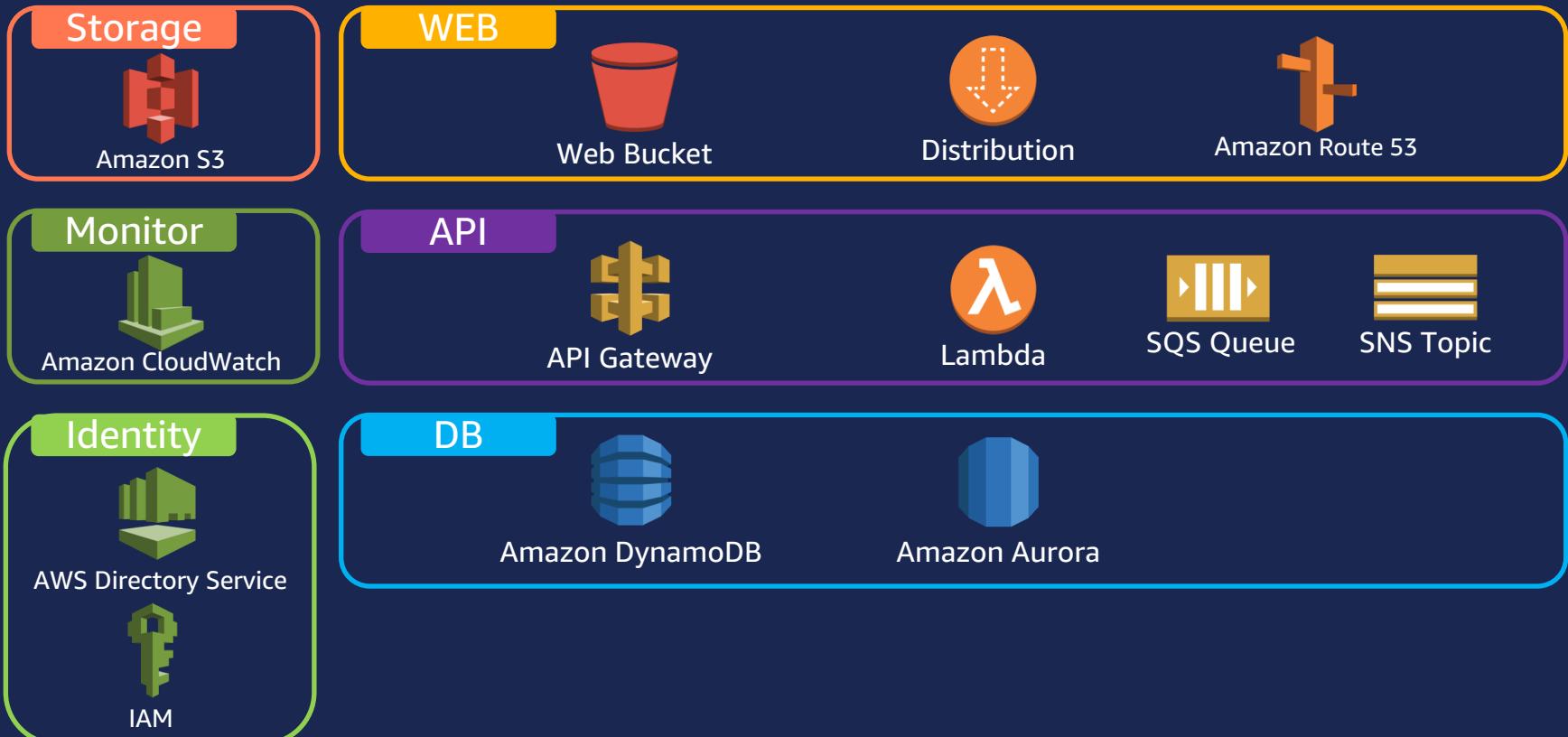


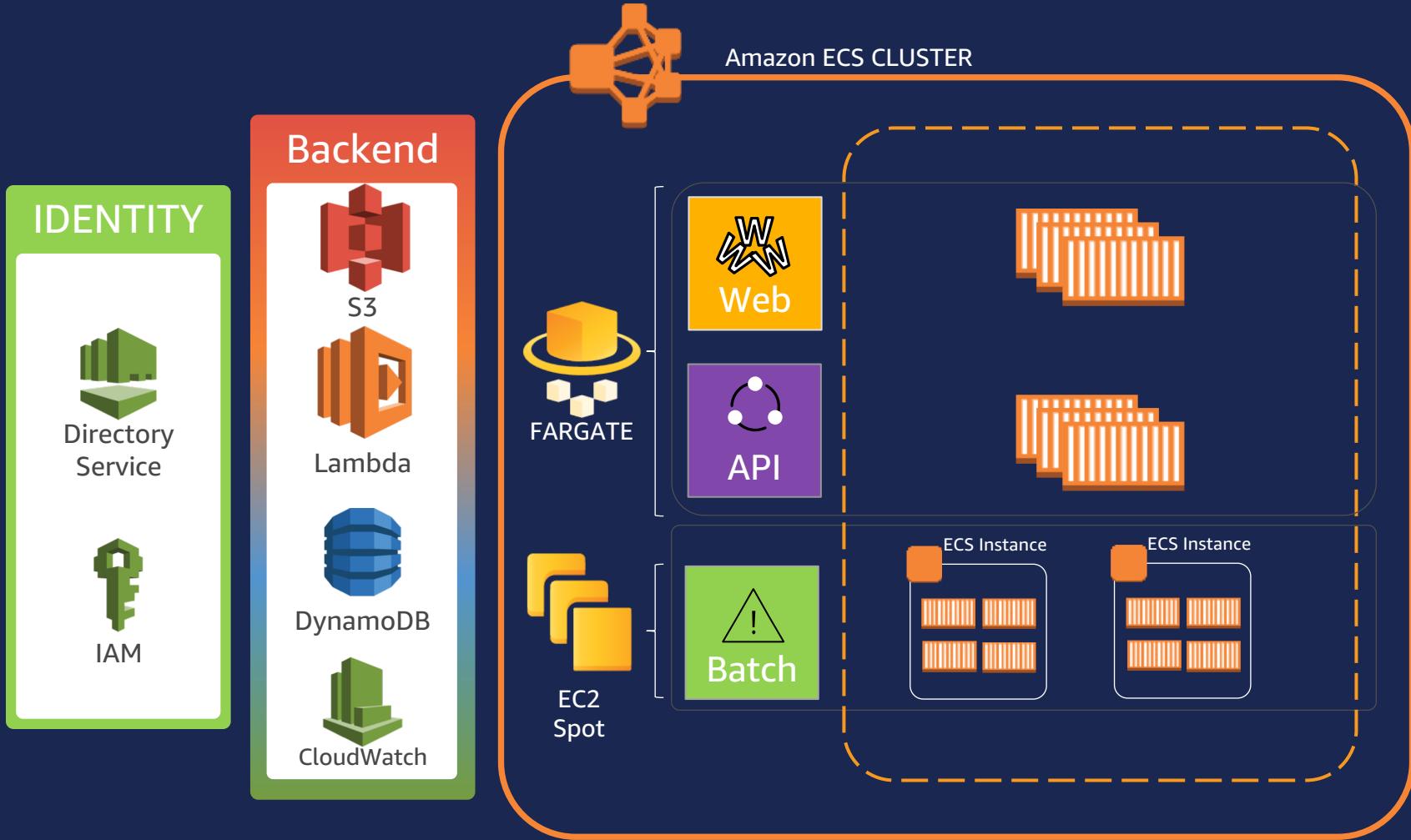
Amazon VPC













Amazon
EC2



Amazon
VPC



AWS
Lambda



Elastic Load
Balancing



Amazon ECS



Amazon
Route 53



Amazon
CloudFront



Amazon
RDS



Amazon
DynamoDB



Amazon
SNS



Amazon
SQS



Amazon API
Gateway



IAM



AWS Directory
Service



Amazon
CloudWatch



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Thank You!



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