



# AWSOME DAY

ONLINE CONFERENCE

11 JULY 2024 | APJ

# Introduction to AWS services

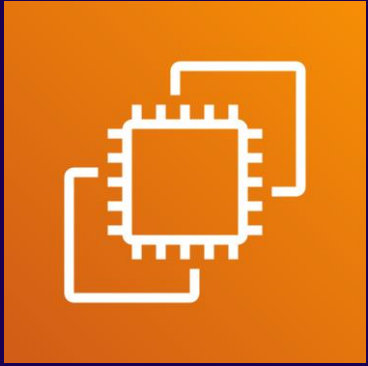
## Compute, storage & databases

Peter Vandaele  
Technical Trainer  
AWS

# Compute



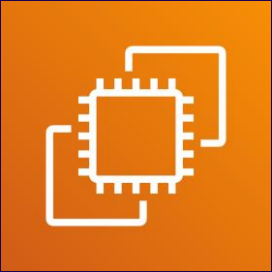
# Amazon Elastic Compute Cloud (Amazon EC2)



Amazon  
EC2

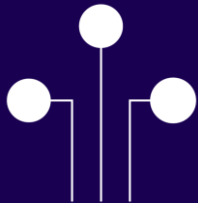
- Resizable compute capacity
- Complete control of your computing resources
- Reduced time required to obtain and boot new server instances

# Virtual machines vs. physical servers



Amazon EC2 can solve some problems that are more difficult with an on-premises server

When using disposable resources



Data-driven  
decisions

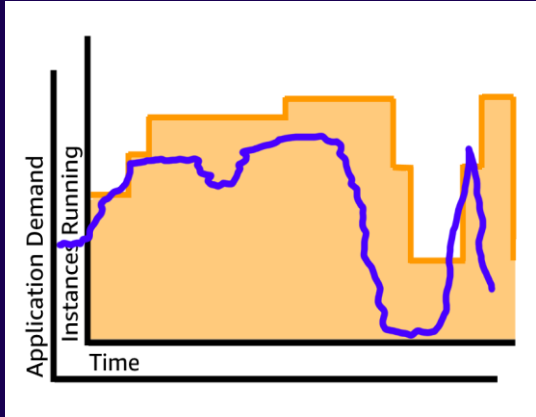


Quick  
iterations

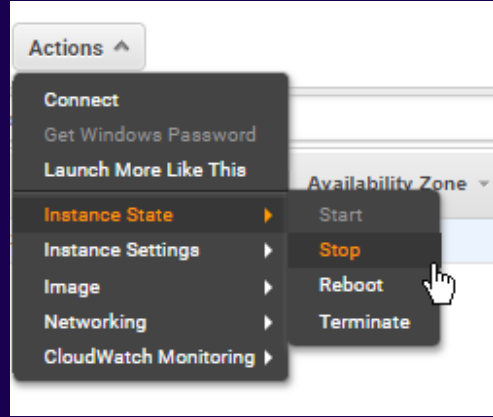


Free to make  
mistakes

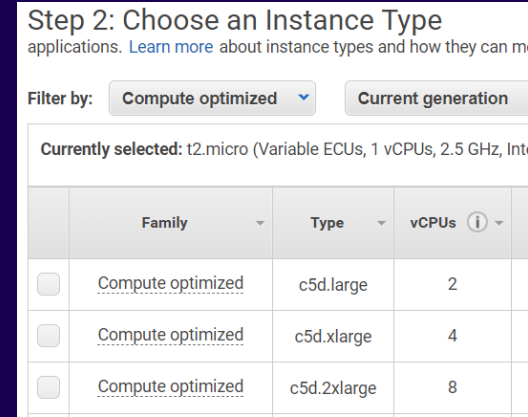
# Benefits of Amazon EC2



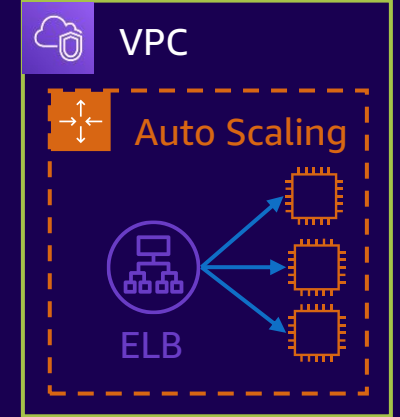
Elasticity



Control



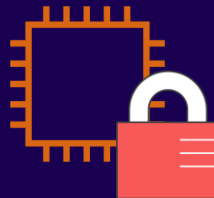
Flexibility



Integrated



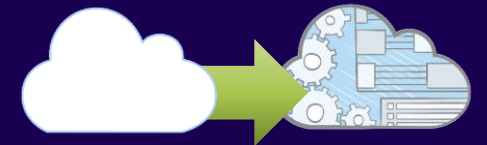
Reliable



Secure



Inexpensive



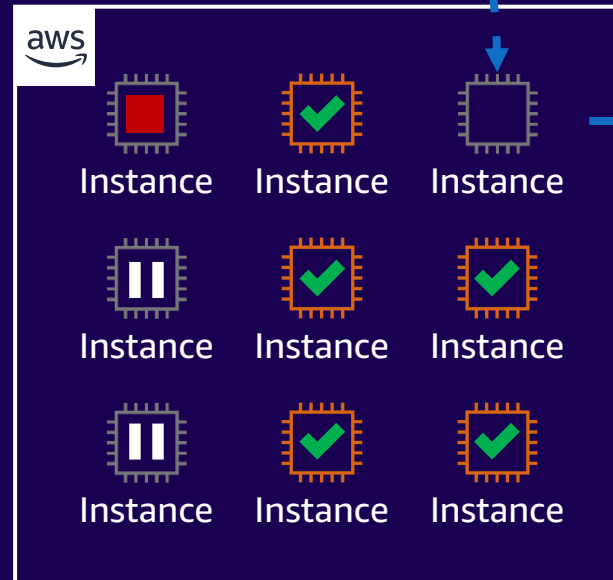
Simple



# Amazon EC2

Amazon EC2 provides pay-as-you-go pricing and a broad selection of hardware and software that's available via the AWS Marketplace by using Amazon Machine Images (AMIs)

Your AMI



Template for

- Storage volumes
- Launch permissions
- A block device mapping

Examples

- ✓ Application server
- ✓ Web server
- ✓ Database server
- ✓ Game server
- ✓ Mail server
- ✓ Media server
- ✓ Catalog server
- ✓ File server

# Amazon EC2 instance families and names

Choosing the correct type is very important for  
**efficient use of your instances and cost reduction**



Instance family	Use cases
<b>General purpose</b> <i>e.g., A1, T3, T3a, T4g, M6g, M7g</i>	<ul style="list-style-type: none"><li>• Low-traffic websites and web applications</li><li>• Small databases and midsize databases</li></ul>
<b>Compute optimized</b> <i>e.g., C5, C6g, C6a, C7g</i>	<ul style="list-style-type: none"><li>• High-performance web servers</li><li>• Video encoding</li></ul>
<b>Memory optimized</b> <i>e.g., R7g, R6g, X2gd, X2i, z1d</i>	<ul style="list-style-type: none"><li>• High-performance databases</li><li>• Distributed memory caches</li></ul>
<b>Storage optimized</b> <i>e.g., I4g, I3, D3, H1</i>	<ul style="list-style-type: none"><li>• Data warehousing</li><li>• Log or data processing applications</li></ul>
<b>Accelerated computing</b> <i>e.g., P5, P4, Inf2, G6, G5g, Trn1</i>	<ul style="list-style-type: none"><li>• 3D visualizations</li><li>• Machine learning</li></ul>



# Amazon EC2 pricing

On-Demand  
Instances

Savings  
Plans

Spot  
Instances

# Unmanaged services compared to managed services



## Unmanaged

You manage scaling, fault tolerance, and availability

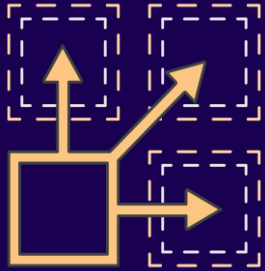


## Managed

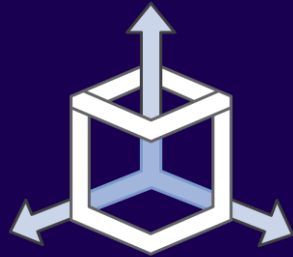
Scaling, fault tolerance, and availability are typically built in to the service

# What is serverless computing?

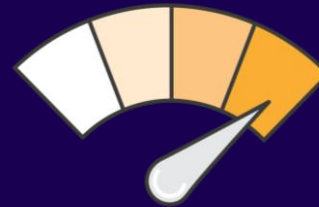
Building and running applications and services without managing servers



No servers to  
provision or manage



Scales  
with usage



Never pay  
for idle



Availability and  
fault tolerance built in

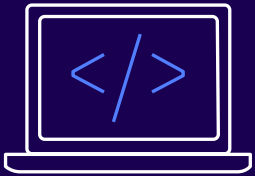
# AWS Lambda



AWS  
Lambda

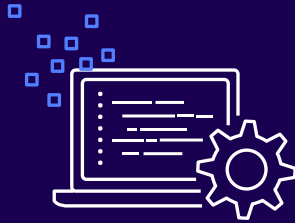
- Fully managed compute service
- Runs stateless code
- Supports multiple languages
- Runs your code on a schedule or in response to events (for example, changes to data in an Amazon S3 bucket or Amazon DynamoDB table)

# Serverless application use cases



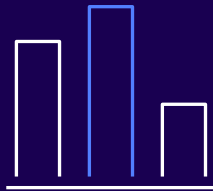
## Web applications

Static websites  
Complex web applications  
Packages for Flask and Express



## Backends

Applications and services  
Mobile  
IoT



## Data processing

Real time  
MapReduce  
Batch  
Machine learning inference



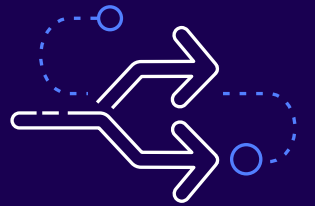
## Chatbots

Powering chatbot logic



## Amazon Alexa

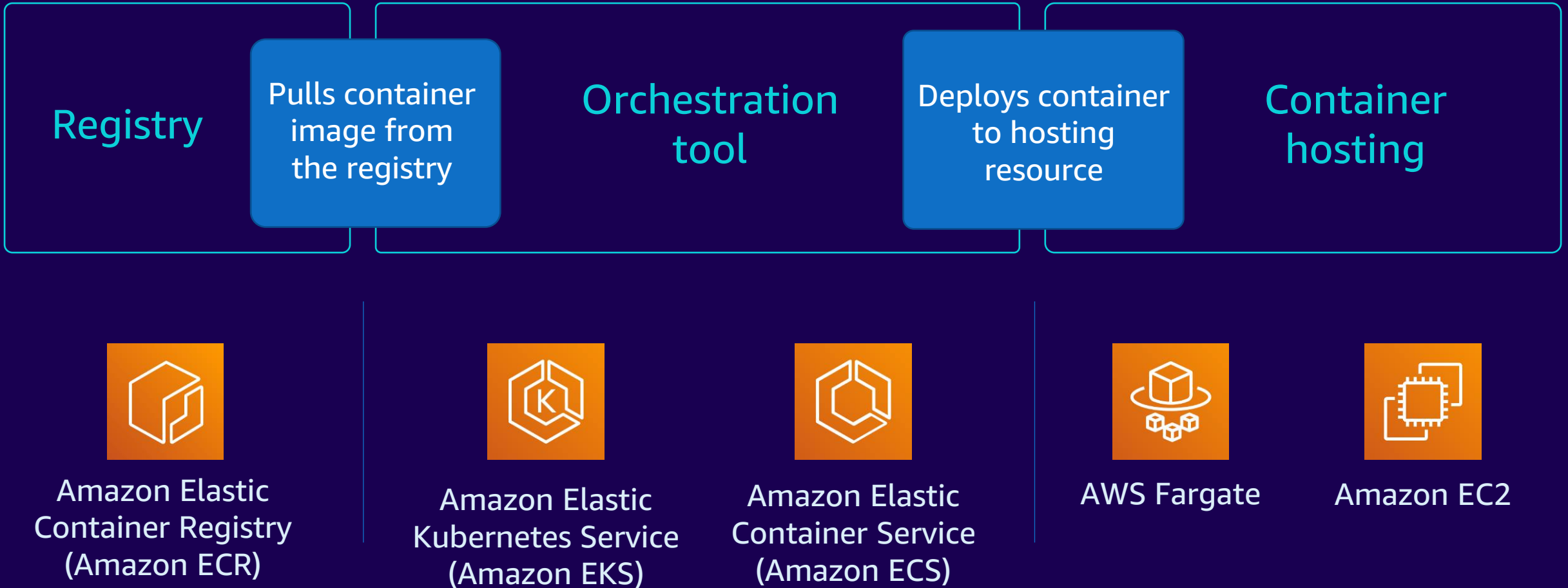
Powering voice-enabled applications  
Alexa Skills Kit



## IT automation

Policy engines  
Extending AWS services  
Infrastructure management

# Running containers on AWS





# Key Takeaways

- EC2 instances – Servers in the cloud!
  - Pay as you go pricing
  - Scale in/out as needed automatically
  - Different instance types (hardware) for your workloads
- Amazon ECS
  - Orchestration for your container deployments
- Serverless
  - You create the code, AWS manages the underlying compute
  - Lambda – On demand, per-request pricing to run code

# Storage



# AWS storage options



## Amazon S3

Scalable, highly durable object storage in the cloud



## Amazon S3 Glacier

Low-cost, highly durable archive storage in the cloud



## Amazon EBS

Network-attached volumes that provide durable block-level storage for Amazon EC2 instances



## Amazon EFS

Scalable network file storage for Amazon EC2 instances



## Amazon FSx

Fully managed, cost-effective file storage offering the capabilities and performance of popular commercial and open-source file systems



## AWS Storage Gateway

Hybrid cloud storage service that gives you on-premises access to virtually unlimited cloud storage.

# Amazon S3



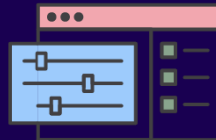
Amazon  
S3



Object-level  
storage



Designed for  
99.9999999999%  
durability



Event triggers

## Use cases

- Content storage and distribution
- Backup and archiving
- Big data analytics
- Disaster recovery
- Static website hosting

# File services use cases



## Amazon EFS

- Simplify Development Operations (DevOps)
- Modernize application development
- Enhance content management systems
- Accelerate data science



## Amazon FSx for Lustre

- Accelerate machine learning
- Enable high performance computing
- Unlock big data analytics
- Increase media workload agility



## Amazon FSx for Windows

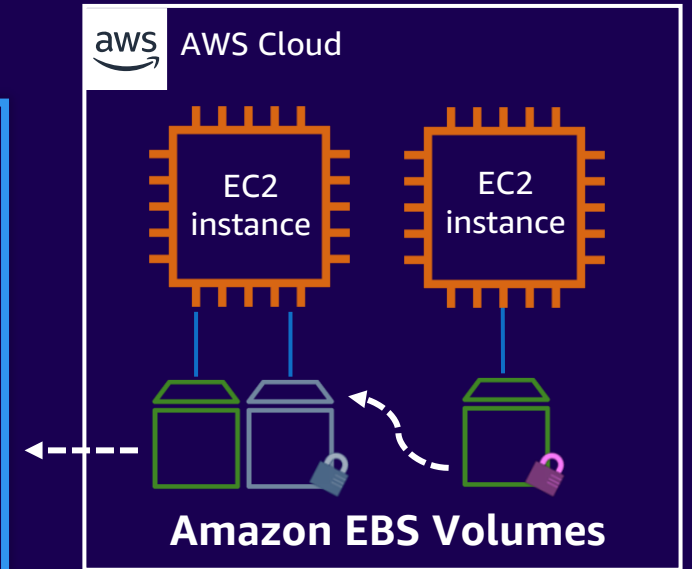
- Migrate Windows file servers to AWS
- Accelerate hybrid workloads
- Reduce Microsoft SQL Server deployment cost
- Simplify virtual desktops and streaming

# Amazon Elastic Block Store (Amazon EBS)

- Persistent block storage for instances
- Protected through replication
- Different drive types
- Scale up or down in minutes
- Pay for only what you provision
- Snapshot functionality
- Encryption available



Create volume snapshots for backup and recovery



Detach and reattach volumes to other EC2 instances



# Key takeaways

## AWS provides a variety of storage options

- Object (Amazon S3)
  - File (Amazon EFS and Amazon FSx)
  - Block storage (Amazon EBS)
- 
- Customers are using our storage services to build:
    - Home directories
    - Data lakes
    - Modern and business-critical applications

# Databases

# DIY (Unmanaged services) compared to AWS database services (managed services )



## Databases on Amazon EC2







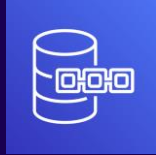


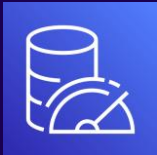

- Operating system access
- Need features of specific application








## AWS database services

- Simple to set up, manage, maintain
- Push-button high availability
- Focus on performance
- Managed infrastructure

# Purpose-built databases

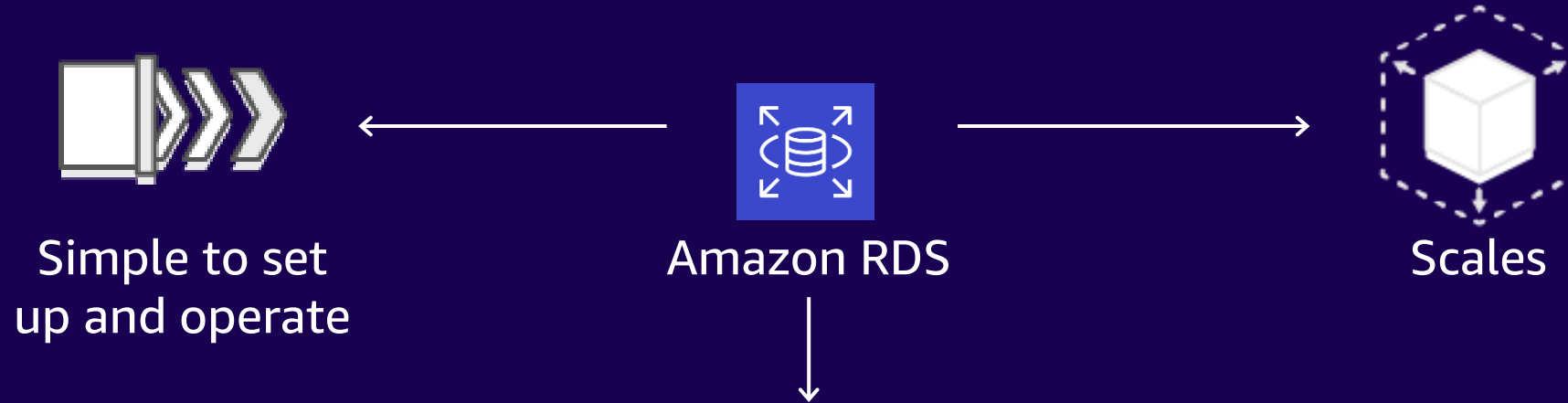
Relational	Non Relational (NoSQL) databases for specific data models and have flexible schemas for building modern applications						
	Key-value	In-memory	Document	Wide-Column	Graph	Ledger	Time Series
 Amazon RDS	 Amazon DynamoDB	 Amazon ElastiCache	 Amazon DocumentDB	 Amazon Keyspaces (for Apache Cassandra)	 Amazon Neptune	 Amazon QLDB	 Amazon Timestream
 Amazon Aurora		 Amazon MemoryDB for Redis					
 Amazon Redshift							

# AWS database options

	SQL	NoSQL
Transactional databases	 Amazon RDS	 Amazon DynamoDB
Data analytics or relationships	 Amazon Redshift	 Amazon Neptune
In-memory data store and cache		 Amazon ElastiCache

# Amazon RDS

Set up, operate, and scale a relational database in the cloud with just a few clicks



Database engines

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# Amazon Aurora

Relational database built for the cloud; compatible with MySQL and PostgreSQL



# Amazon DynamoDB

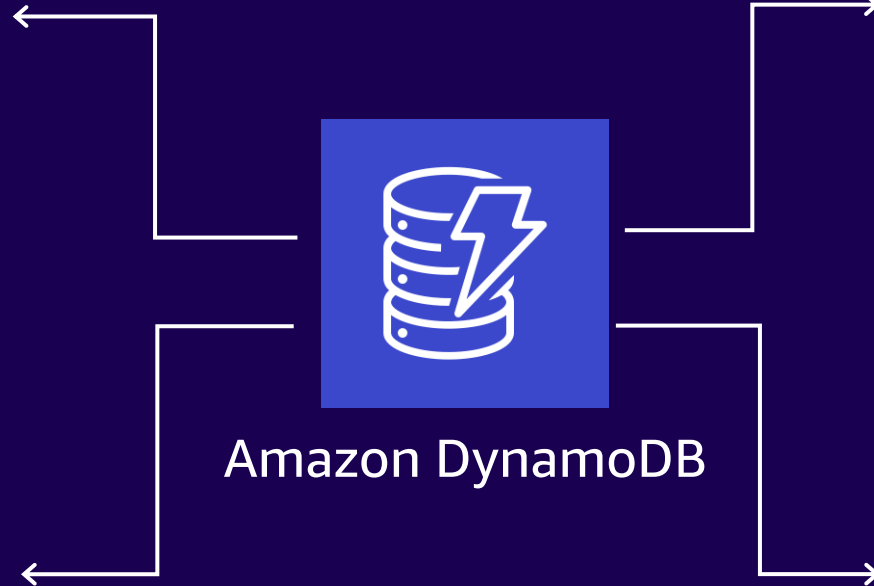
Fast and flexible NoSQL database service for any scale



Fully  
managed



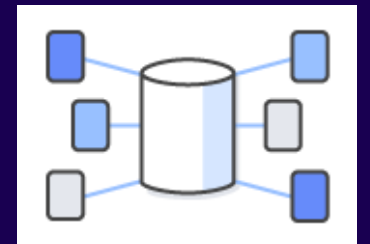
Fast,  
consistent  
performance



Fine-grained  
access control



Flexible



# Key takeaways

## AWS provides a variety of database options

- Relational (Amazon Aurora, Amazon RDS, Amazon Redshift)
- Nonrelational (Amazon DynamoDB, Amazon Neptune, Amazon DocumentDB, Amazon Keyspaces, Amazon ElastiCache, Amazon QLDB, Amazon Timestream)
- NoSQL databases are widely recognized for their ease of development, functionality, and performance at scale

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# Test your knowledge

# Thank you!