



# INNOVATE2018

## ONLINE CONFERENCE

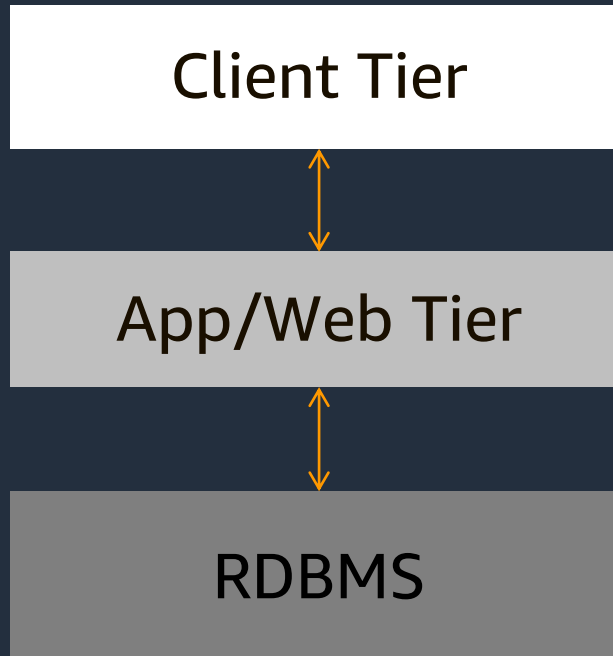


# AWS Purpose-Built Database Strategy: The Right Tool for The Right Job (Level 200)

Blair Layton, Business Development Manager

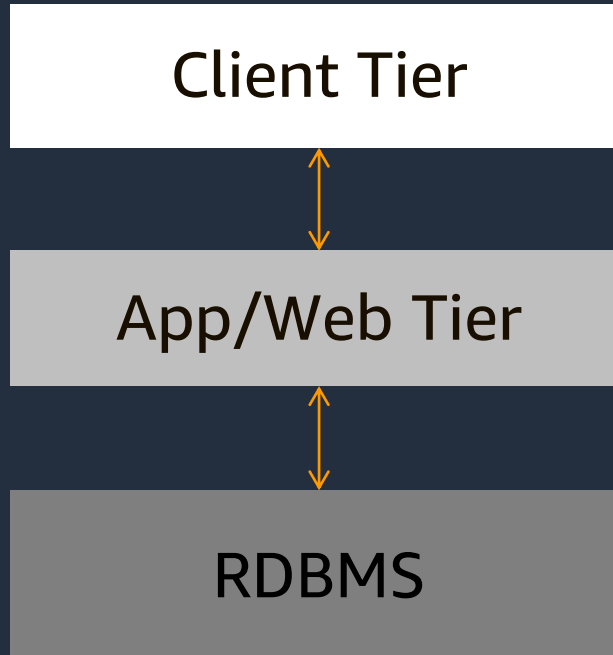
# The Database Market is Changing

# Traditional Database Architecture



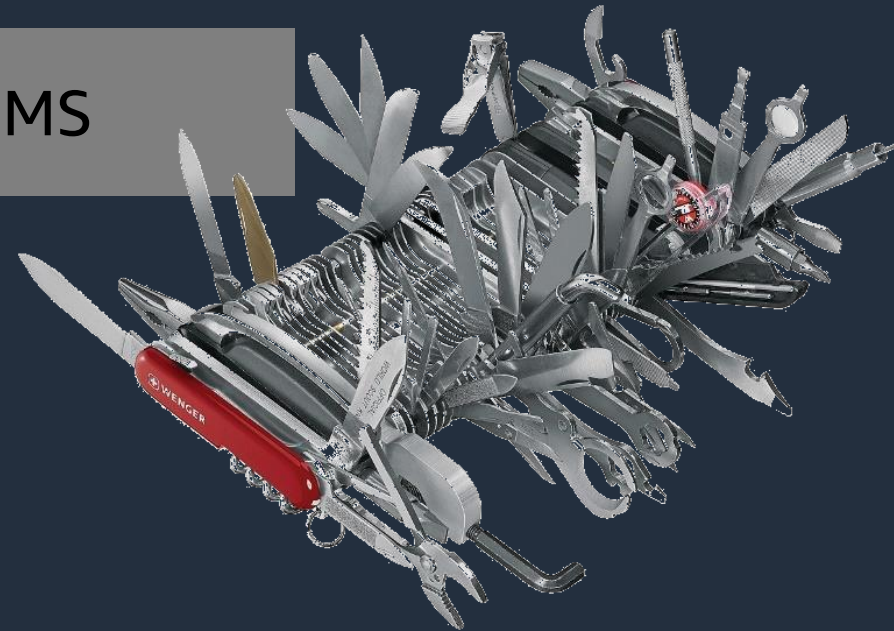
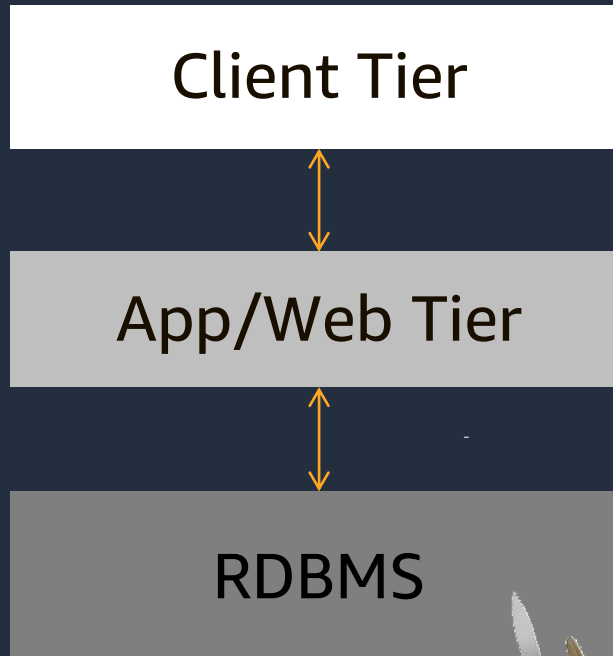
# Traditional Database Architecture

*one database for  
all workloads*

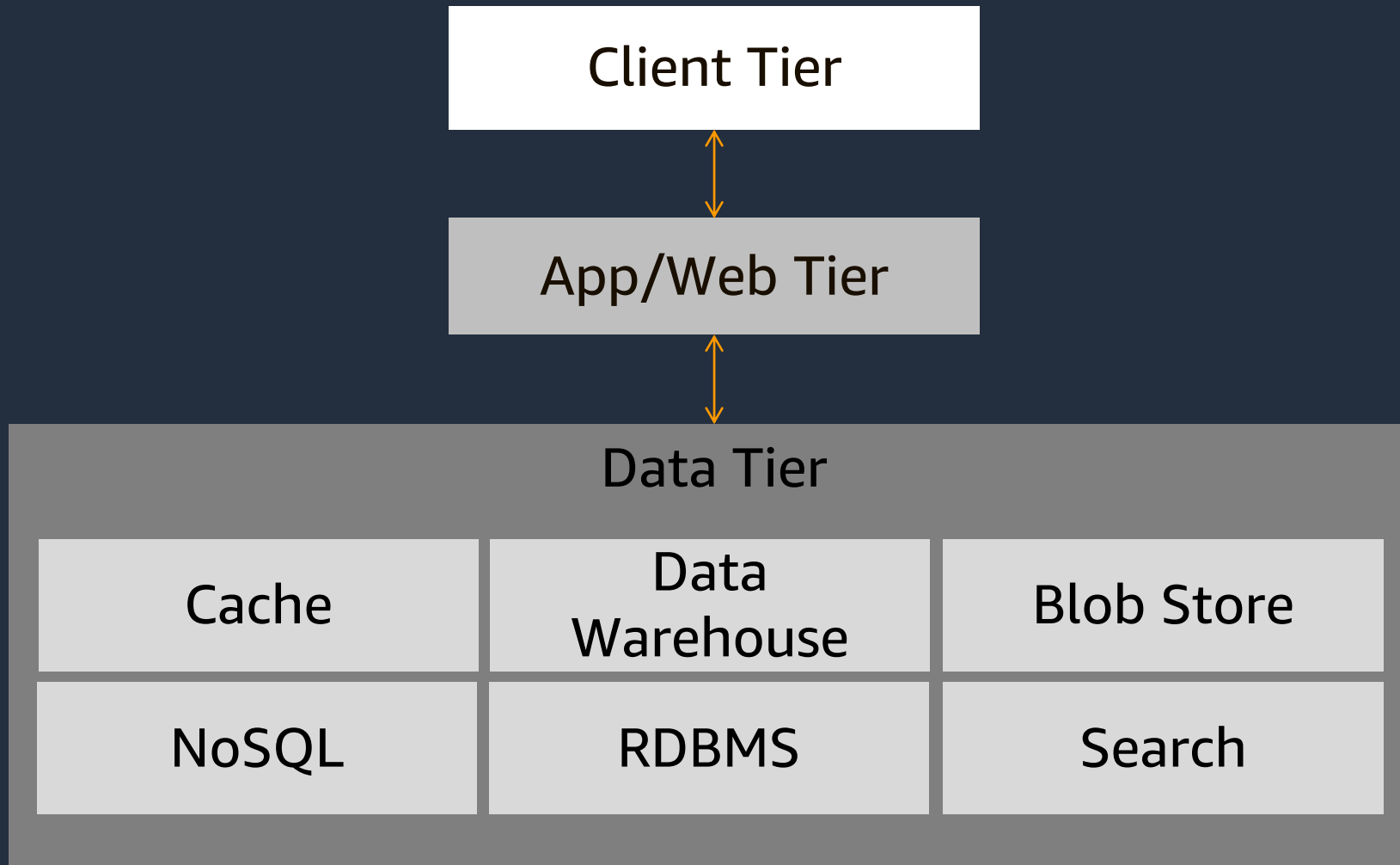


# Traditional Database Architecture

key-value access  
complex queries  
transactions  
analytics

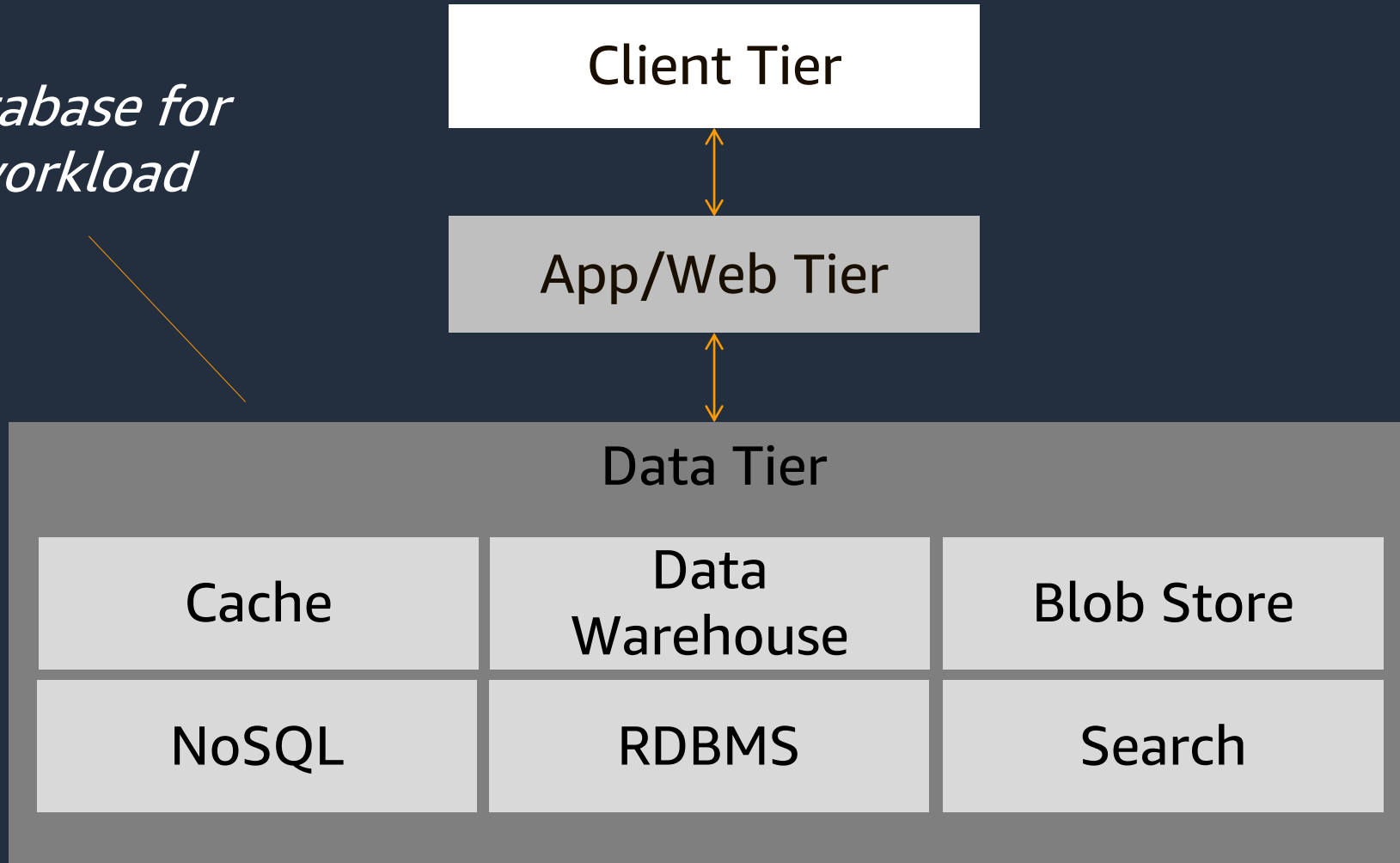


# Cloud Data Tier Architecture

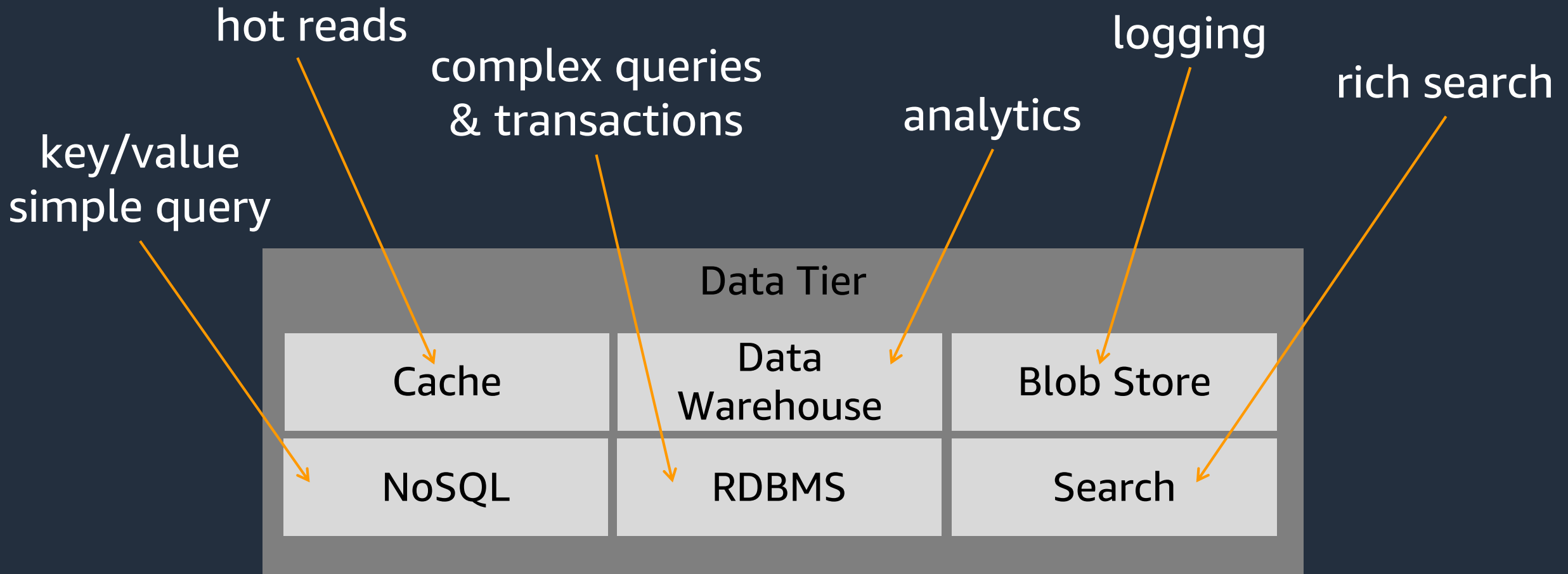


# Cloud Data Tier Architecture

*best database for  
each workload*



# Workload Driven Data Store Selection





# Database Characteristics

## Relational



Referential integrity with strong consistency, transactions, and hardened scale

Amazon Aurora,  
Amazon RDS

## Key-value



Low-latency, key-based queries with high throughput and fast ingestion of data

Amazon  
DynamoDB

## Document



Indexing and storing documents with support for query on any property

Amazon  
DynamoDB

## Graph



Creating and navigating relations between data easily and quickly

Amazon  
Neptune

## In-memory



Microsecond latency, key-based queries, specialized data structures

Amazon  
ElastiCache for  
Redis &  
Memcached

## Search



Indexing and searching semistructured logs and data

Amazon  
Elasticsearch  
Service

# AWS Database Services

# AWS Databases and Analytics

Broadest and deepest portfolio purpose-built for builders

## Business Intelligence & Machine Learning



Amazon QuickSight

Machine Learning

### Operational (OLTP)

### Analytics (OLAP/DSS)



**DynamoDB**  
(Wide Column/Document)



**Neptune**  
(Graph)



**ElastiCache**  
(Indexed Key Value)

Non-Relational Databases



**Aurora**



**RDS**

Relational Databases

DW

Big Data Processing

Ad hoc



**Amazon Redshift**



**EMR**



**Athena**

Real-time



**Elasticsearch Service**



**Kinesis Data Analytics**

## Data lake (Batch/ETL)



**S3/Glacier**  
(Storage)



**Glue**  
(ETL & Data Catalog)



**Macie**  
(Data Protection)

## Data Movement

Database Migration Service | Snowball | Snowmobile | Kinesis Data Firehose | Kinesis Data Streams

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# Amazon RDS

Managed relational database service with a choice of six popular database engines

Amazon  
**Aurora**

MySQL

PostgreSQL

MariaDB

Microsoft  
SQL Server

ORACLE

## Easy to administer



No need for infrastructure provisioning, installing and maintaining database software.

## Highly flexible



Scale database compute and storage with a few mouse clicks and zero downtime.

## Available & durable



Multi-AZ:  
Automatically replicates data.  
Automated backup, snapshots, failover.

## Fast



Choose between dual SSD-backed storage for high-performance OLTP.

# Amazon Aurora

MySQL and PostgreSQL-compatible relational database built for the cloud

Performance and availability of commercial-grade databases at 1/10th the cost

---



## Performance & scalability

5x throughput of standard MySQL and 3x of standard PostgreSQL; scale-out up to 15 read replicas



## Availability & durability

Fault-tolerant, self-healing storage. Six copies of data across three AZs. Continuous backup to Amazon S3



## Highly secure

Network isolation, encryption at rest and in transit



## Fully managed

Managed by Amazon RDS: no hardware provisioning, software patching, setup, configuration, or backups

# Demo

# Amazon DynamoDB

Fast and flexible NoSQL database service for any scale

Key-value NoSQL database that supports both document and wide column structures

## Highly scalable



Auto-scaling tables serving millions of requests per second, storing hundreds of terabytes of data.

## Fast, consistent performance



Consistent single-digit millisecond latencies at any scale. DAX speeds up times to microseconds.

## Fully managed



Automatic provisioning and infrastructure management.

## Business-critical reliability



Data replicated across multiple AZs and accessed with regionally available APIs.



# Amazon DynamoDB

## Delivering on customer needs

February 2017



Time to  
Live (TTL)

April 2017



VPC  
Endpoints

April 2017



DynamoDB  
Accelerator (DAX)

June 2017



Auto  
Scaling

November 2017



Global Tables

November 2017



Backup and  
Restore

February 2018



Encryption at rest

# Amazon Neptune

Fully managed graph database

## Fast



Query billions of relationships with millisecond latency

## Reliable



Six replicas of your data across three AZs with full backup and restore

## Easy



Build powerful queries easily with Gremlin and SPARQL

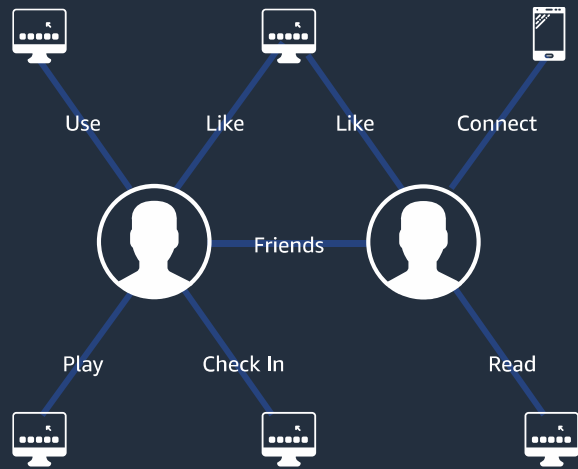
## Open



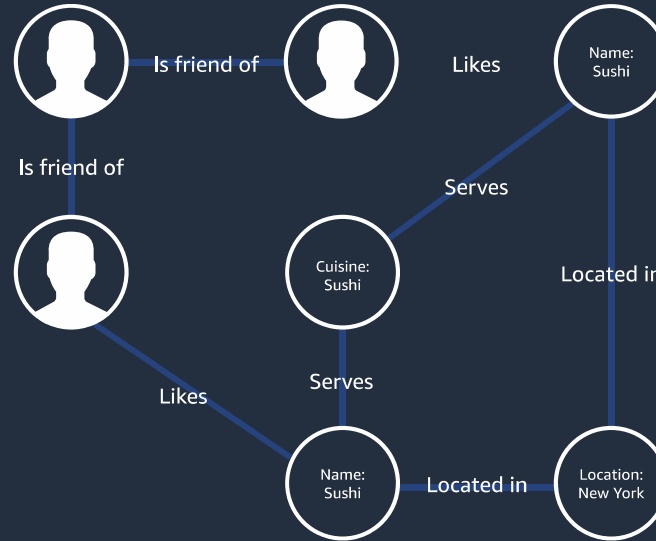
Supports Apache TinkerPop & W3C RDF graph models

# Highly Connected Data Best Represented in a Graph

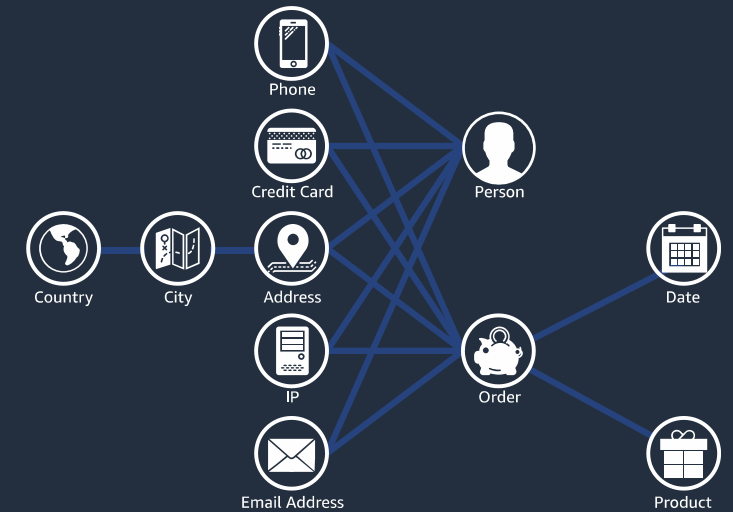
## Social news feed



## Restaurant recommendations



## Retail fraud detection



# Amazon ElastiCache

Fully managed, Redis or Memcached compatible, in-memory data store and cache

Extreme performance



In-memory data store and cache for sub-millisecond response times

Secure & hardened



VPC for cluster isolation, encryption at rest and transit, and HIPAA compliance

Easily scalable



Read scaling with replicas, write and memory scaling with sharding, undistruptive scaling

Highly available & reliable



Multi-AZ with automatic failover

# Why Use In-Memory Data Stores and Caches

Internet scale applications need low latency and high throughput

In-memory data stores and caches:

- Deliver sub-millisecond performance
- Deliver high throughput to support millions of users
- Significantly reduce cost-at-scale



Gaming  
leaderboards



Media  
streaming



Session  
stores



Ride  
hailing



Social  
media



Dating

# Summary

# Summary

- The database market is changing
- Relational databases are not the best solutions for all workloads
- Choose the best database or data store for the job at hand
- AWS has a comprehensive data management platform

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## **AWS Managed Service Providers**

APN Consulting Partners who are skilled at cloud infrastructure and application migration, and offer proactive management of their customer's environment.



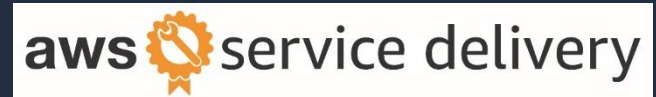
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APN Partners who have demonstrated technical proficiency and proven customer success in specialized solution areas.



## **AWS Marketplace**

A digital catalog with thousands of software listings from independent software vendors that make it easy to find, test, buy, and deploy software that runs on AWS.



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**Learn more at the AWS Partner Network Booth**

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