



PUBLIC SECTOR
SUMMIT ONLINE

Purpose-built databases for modern applications

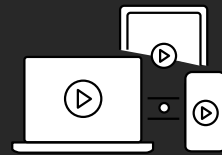
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Amazon Web Services

Agenda



What's a modern application?



Why consider purpose-built databases?



AWS databases: The right tool for the right job

What's a modern application?

Modern application requirements

Requires more performance, scale, and availability



E-commerce



Media streaming



Social media



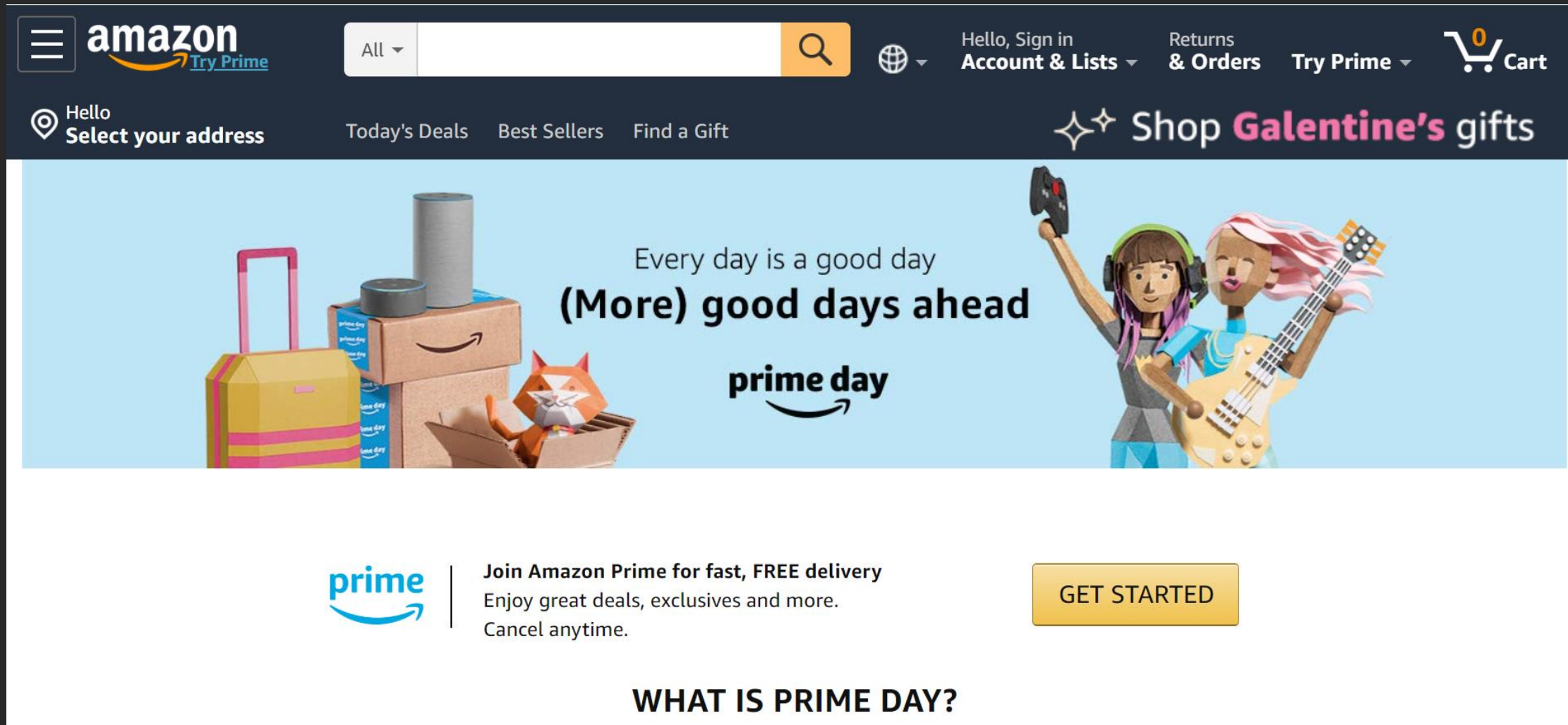
Online gaming



Shared economy

Users	1M+
Data volume	Terabytes to petabytes
Locality	Global
Performance	Microsecond latency
Request rate	Millions per second
Access	Mobile, IoT, devices
Scale	Virtually unlimited
Payment model	Pay as you go
Developer access	Instance API access
Development	Apps and storage are decoupled

Internet-scale e-commerce



The image shows a screenshot of the Amazon.com homepage. At the top, there is a navigation bar with the Amazon logo, a search bar, and links for account, orders, and cart. Below the navigation bar, there is a banner for Prime Day with the text "Every day is a good day (More) good days ahead" and "prime day". To the right of the banner, there is a "Shop Galentine's gifts" section. Below the banner, there is a section for Amazon Prime with the text "Join Amazon Prime for fast, FREE delivery" and a "GET STARTED" button. At the bottom, there is a link for "WHAT IS PRIME DAY?".

amazon Try Prime

All

Hello, Sign in Account & Lists Returns & Orders Try Prime Cart

Hello Select your address Today's Deals Best Sellers Find a Gift

Shop Galentine's gifts

Every day is a good day
(More) good days ahead
prime day

prime

Join Amazon Prime for fast, FREE delivery
Enjoy great deals, exclusives and more.
Cancel anytime.

GET STARTED

WHAT IS PRIME DAY?

The world's largest e-commerce business, Amazon.com, runs on **purpose-built databases** because of their **scale**, **performance**, and **maintenance benefits**

Things with purpose



Instead of a monolithic application,



build microservices with purpose-built tools

Why consider purpose-built databases?

Why consider purpose-built databases?



Scale



Performance



Availability



Capital One migrated its monolithic mainframe to **highly available** AWS databases for microservices-based applications

Transactional data: **Amazon RDS**

State management

Analytics: **Amazon Redshift**

Web logs

Consistent low latency: **Amazon DynamoDB**

User data and mobile app

AWS databases: The right tool for the right job

Purpose-built databases

Relational

Key-value

Document

In-Memory

Graph

Time-Series

Ledger

Wide Column



Amazon
Aurora



Amazon
RDS



Amazon
DynamoDB



Amazon
DocumentDB



Amazon
ElastiCache



Amazon
Neptune



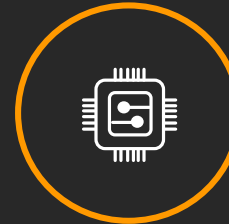
Amazon
Timestream



Amazon
QLDB



Amazon
Keyspaces



Amazon Aurora

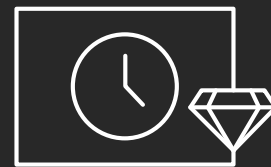


MySQL and PostgreSQL-compatible relational database built for the cloud



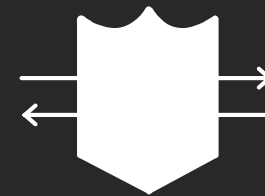
Performance and scalability

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



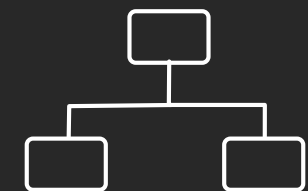
Availability and durability

Fault-tolerant, self-healing storage; 6 copies of data across 3 AZs; continuous backup to Amazon S3



Highly secure

Network isolation, encryption at rest and in transit



Fully managed

Managed by Amazon RDS: On your part, no server provisioning, software patching, setup, configuration, or backups

Demo

Amazon DynamoDB



Fast and flexible key-value database service for any scale



Performance at scale

Consistent, single-digit millisecond response times at any scale; build applications with virtually unlimited throughput



Serverless architecture

No hardware provisioning, software patching, or upgrades; scales up or down automatically; continuously backs up your data



Enterprise security

Encrypts all data by default and fully integrates with AWS Identity and Access Management (IAM) for robust security



Global replication

You can build global applications with fast access to local data by easily replicating tables across multiple AWS Regions

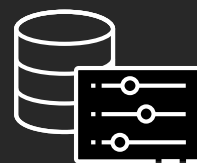
Amazon DocumentDB



Fast, scalable, highly available MongoDB-compatible database service



Millions of requests per second;
millisecond latency



Same code, drivers, and tools
you use with MongoDB



Simple and
fully managed



Secure and
compliant

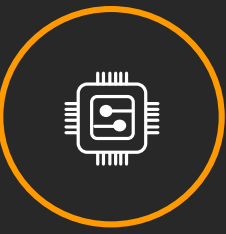


2x throughput of
managed MongoDB services



Deeply integrated
with AWS services

Amazon ElastiCache



Managed, Redis, or Memcached-compatible in-memory data store



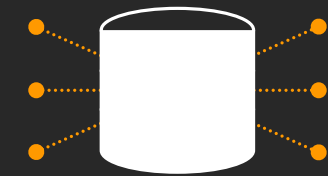
Unlimited scale

Read scaling with replicas;
write and memory scaling with
sharding; nondisruptive scaling



Consistent high performance

In-memory data store
and cache for submillisecond
response times



Fully managed

AWS manages all hardware
and software setup,
configuration, and monitoring

Amazon Neptune



Fast, reliable graph database built for the cloud

Open



Supports Apache TinkerPop and W3C RDF graph models

Fast



Queries billions of relationships with millisecond latency

Reliable



6 replicas of your data across 3 AZs with full backup and restore

Simple



Build powerful queries easily with Gremlin and SPARQL

Amazon Timestream



Fast, scalable, fully managed time series database

1,000x faster and 1/10th the cost of relational databases



Collect data at the rate of millions of inserts per second (10M/second)

Trillions of daily events



Adaptive query processing engine maintains steady, predictable performance

Time-series analytics



Built-in functions for interpolation, smoothing, and approximation

Serverless



Automated setup, configuration, server provisioning, and software patching

Amazon Quantum Ledger Database



Fully managed ledger database: Track and verify history of all changes made to your application's data

Immutable and transparent



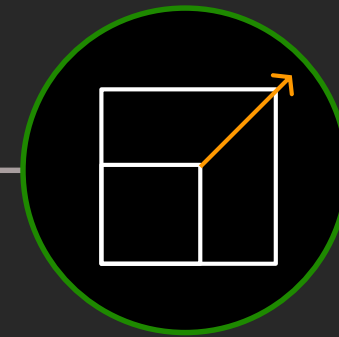
Append-only, immutable journal tracks history of all changes that cannot be deleted or modified; get full visibility into entire data lineage

Cryptographically verifiable



All changes are cryptographically chained and verifiable

Highly scalable



Executes 2–3x as many transactions as ledgers in common blockchain frameworks

Easy to use



Flexible document model; query with familiar SQL-like interface

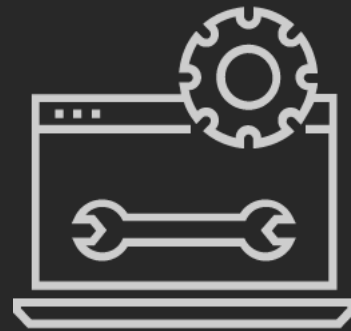
Amazon Keyspaces (for Apache Cassandra)

Fast, reliable wide column database built for the cloud



Apache Cassandra-compatible

Implements the Apache Cassandra Query Language (CQL) and the Apache Cassandra CQL API



No servers to manage

No need to provision, patch, or manage servers



Performance at scale

Consistent, single-digit millisecond response times at any scale



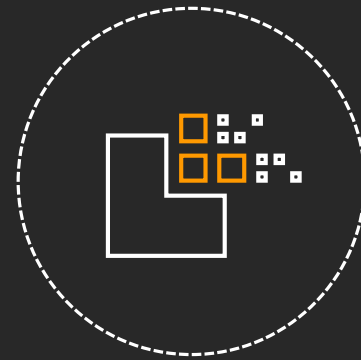
Highly available and secure

Tables are encrypted by default and replicated three times in multiple AWS Availability Zones for high availability

Our approach



Architect services ground up for the cloud and for the explosion of data



Offer a portfolio of purpose-built services, optimized for your workloads



Help you innovate faster through managed services



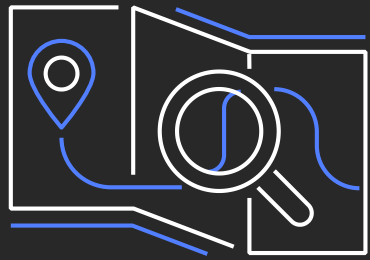
Provide services that help you migrate existing apps and databases to the cloud

Get started

See more information at:
aws.amazon.com/databases

Contact us at:
<https://aws.amazon.com/contact-us/>

AWS Training and Certification



Training for the whole team

Explore tailored learning paths for customers and partners



Flexibility to learn your way

Build cloud skills with 550+ free digital training courses, or dive deep with classroom training



Validate skills with AWS Certification

Demonstrate expertise with an industry-recognized credential



Education programs

Find entry-level cloud talent with AWS Academy and AWS re/Start

aws.amazon.com/training

Thank you!

Blair Layton