AWS Database Services

- AWS offers a wide range of database services for you to choose from. The service fall into two groups: relational and non-relational (NoSQL).

Database type	Examples	AWS service
Relational	Traditional applications, enterprise resource planning (ERP), customer relationship management (CRM), ecommerce	Amazon Aurora, Amazon RDS, Amazon Redshift
Key-value	High-traffic web applications, ecommerce systems, gaming applications	Amazon DynamoDB
In-memory	Caching, session management, gaming leaderboards, geospatial applications	Amazon ElastiCache, Amazon MemoryDB for Redis
Document	Content management, catalogs, user profiles	Amazon DocumentDB (with MongoDB compatibility)
Wide column	High-scale industrial apps for equipment maintenance, fleet management, and route optimization	Amazon Keyspaces
Graph	Fraud detection, social networking, recommendation engines	Amazon Neptune
Time series	Internet of Things (IoT) applications, DevOps, industrial telemetry	Amazon Timestream
Ledger	Systems of record, supply chain, registrations, banking transactions	Amazon Ledger Database Services (QLDB)

Type of Database	Use Cases	Amazon Services
Key-value Key-value databases store data as a collection of key-value pairs with the key as an ID. These databases can store various types of data, including simple and compound objects.	● Real-time bidding ● eCommerce shopping carts ● Product catalogs ● Customer preferences	● Amazon DynamoDB
Document Document databases store data in JSON or JSON-like documents. You can query data using the same document-model format used in programming applications.	● Cataloging ● Content management systems ● Customer profiles and personalization ● Mobile apps	● Amazon DocumentDB

In-memory In-memory databases store data in-memory for low-latency access. You can use these stores as a database, cache, message broker, or queue.	● Caching ● Session stores ● Gaming ● Leaderboards ● Geospatial services ● Pub/sub messaging ● Real-time streaming	● Amazon ElastiCache for Memcached ● Amazon ElastiCache for Redis
Graph Graph databases are a type of NoSQL (non-relational) database. This database type represents relationships directly. You can query data with specific graph languages.	● Fraud detection ● Social networking ● Recommendation engines ● Knowledge graphs ● Data lineage	● Amazon Neptune
Time-series Time-series databases store data in time-order and as append-only. You can query data over various time intervals.	● DevOps ● Application monitoring ● Industrial telemetry ● IoT applications	● Amazon Timestream

Ledger Ledger databases store data in an immutable, transparent, and cryptographically verifiable log. This log is owned by a trusted central authority to ensure provenance.	● Finance ● Manufacturing ● Insurance claims ● HR and payroll ● Retail inventories	●Amazon Quantum Ledger Database

Amazon Relational Database Service (RDS)

- Easy to manage relational databases optimized for total cost of ownership
- Amazon RDS is a managed, relational database service that includes six different database options. These include AWS Oracle, PostgreSQL, AWS MySQL, MariaDB, SQL Server, and Amazon Aurora. You can manage these database engines from a centralized management console, a command-line interface, or via API calls. When using this service, many administrative tasks are automated, including database setup, hardware provisioning, backup, and updating.

Use cases

- Build web and mobile applications
- Move to managed databases
- Break free from legacy databases

Amazon DynamoDB

- Serverless, NoSQL, fully managed database with single-digit millisecond performance at any scale
- Amazon DynamoDB is a fully managed, document and key-value database. It includes features for multi-master, multi-region used along with built-in security, automated backup and restoration, and in-memory caching. DynamoDB can provide support for serverless web apps, microservices, and mobile backends

Use cases

- Develop software applications
- Create media metadata stores

- Deliver seamless retail experiences
- Scale gaming platforms

Amazon ElastiCache

- Real-time performance for real-time applications
- Amazon ElastiCache is a serverless, Redis- and Memcached-compatible caching service delivering real-time, cost-optimized performance for modern applications. ElastiCache scales to hundreds of millions of operations per second with microsecond response times, and offers enterprise-grade security and reliability.
- ElastiCache is a web service that makes it easy to deploy and run Memcached or Redis protocol-compliant server nodes in the cloud.

Use cases

1. Lower total cost of ownership by easing backend database load
2. Real-time application data caching
3. Real-time session stores
4. Real-time leaderboards

Amazon EMR

- Amazon EMR is a web service that enables businesses, researchers, data analysts, and developers to process vast amounts of data easily and cost-effectively.
- EMR utilizes a hosted Hadoop framework running on Amazon EC2 and Amazon S3.
- Managed Hadoop framework for processing huge amounts of data.
- Also support Apache Spark, HBase, Presto and Flink.
- Most commonly used for log analysis, financial analysis, or extract, translate and loading (ETL) activities.