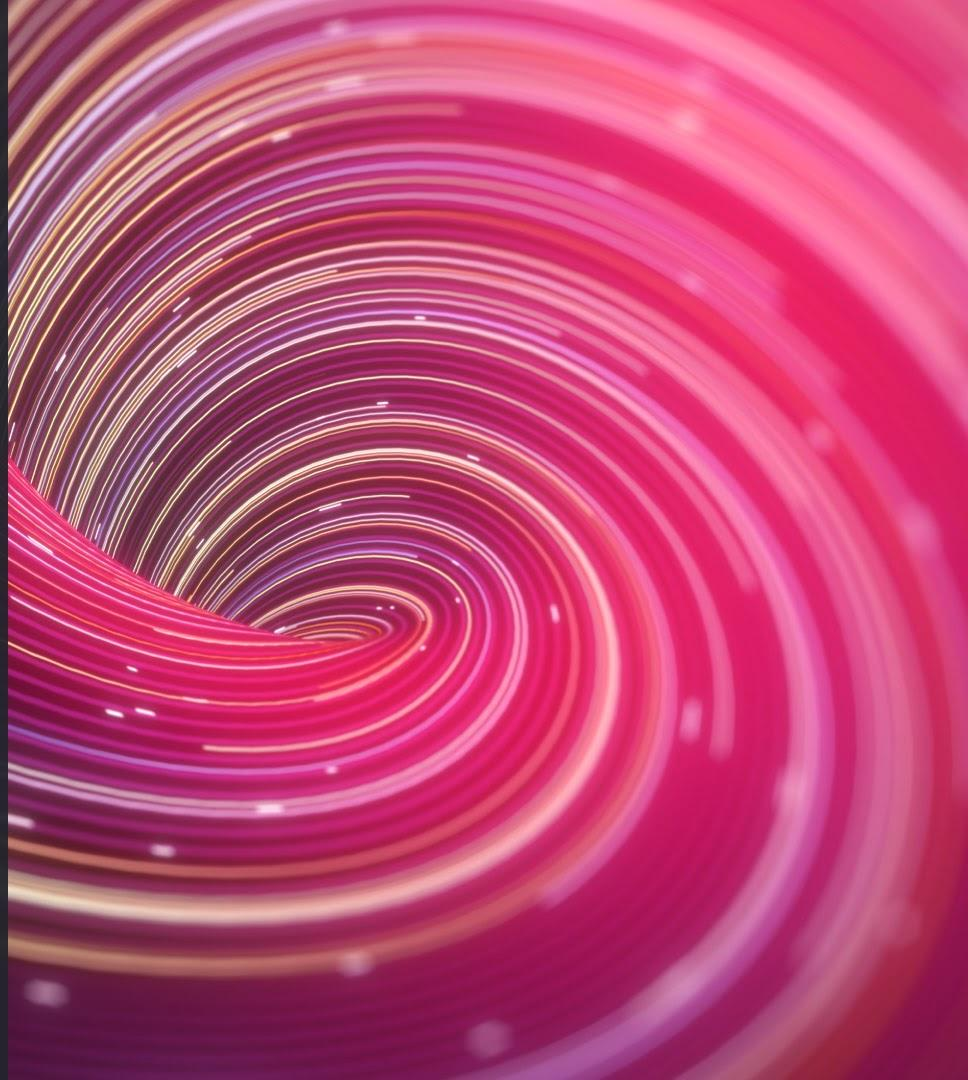




# Our Ideal Data Solution

Mature & Highly Performant NoSQL Database



# What is RavenDB

**RavenDB is a NoSQL Document Database** that addresses the needs of applications operating on the cloud, over multiple devices, and throughout the Internet of Things (IoT).

It was one of the first databases to be built especially for a distributed environment and is the first Document Database to offer high performance and **Fully Transactional (ACID) Data Integrity**.

- Mentioned in both Forrester and Gartner research.
- Used by Thousands of organizations for their data needs.
- Ranked among the top 15 Document Databases Worldwide (Source DB-Engines)
- RavenDB employs over 50 developers in offices spanning North America, Europe, and the Middle East.
- Version 1.0 was released in 2010 and RavenDB 5.0 was released in 2020.

# RAVENDB CLOUD

RavenDB Cloud is a managed Cloud Service.

Offering a Database as a Service on **Amazon Web Services (AWS)**,  
**Microsoft Azure**, and **Google Cloud Platform (GCP)**.



# Clients Served

Clients range from Startups to Fortune 500 Large Enterprises.

RavenDB serves major financial institutions, auto manufacturers, media conglomerates, and a fast-food restaurant chain that has 1.5 million instances of RavenDB running throughout its 36,000+ locations.



*95% of developers that choose RavenDB, **stay** with RavenDB.*

# Why RavenDB?

RavenDB was created to address emerging needs in database systems as a result of a changing technological landscape.



## Data Integrity

- Fully ACID transactions, including Multi-Document and Cluster-Wide.

## Scalability

- Native Clustering, and the ability to run on any system.

## Performance

- So highly performant you can run production applications on a Raspberry Pi.

## Simplicity

- Streamlined development with easy set up & programming. No need for ORM.

# 10,000 ft Overview



## Auto Indexing

Increase performance by automatically creating, using and updating indexes based on your queries.



## Superior Performance

150,000+ writes and 1,000,000+ reads per second on commodity hardware



## Management Studio GUI

With a point and a click, you can set up databases, nodes, collections, and even create and edit documents.



## Secure By Default

X.509 certificate-based authentication and encryption at rest. Established security protocols such as TLS and HTTPS protect you in production.



## Master - Master

Read and write to any node in your cluster. Continue to work offline even without network connectivity.



## Easy to Use

Setup wizard gets you secure and running in 10 minutes on-prem, 2 minutes using RavenDB Cloud.



## Acid Transactions

Single-node and cluster-wide ACIDity by default.



## Native MapReduce & Full Text Search

All-in-one database. No third-party services or extra costs.



## Multi-Model

Document Model, Key-Value, Attachments, Counters, Indexes, and Time-Series.

# RavenDB is a NoSQL Database

As a NoSQL database, RavenDB has many advantages over its relational counterparts.

## Avoids Typical RDBMS Problems



- **NO** Full table scans due to queries without indexes
- **NO** SELECT N+1 problem
- **NO** SQL Injection attacks
- **NO** JOINS to connect multiple tables

## Schemaless



- Ability to store semi-structured or even unstructured data
- Fast prototyping
- Fast development

## Distributed



- Natively distributed, unlike RDBMS
- Supports topologies that can span over millions of nodes if needed
- Easy to scale out

## Speed



- Optimized for blazingly fast queries
- None of the typical RDBMS bottlenecks
- Map/Reduce aggregation features deliver results almost instantaneously even for millions of entries.

# ACIDity in RavenDB

RavenDB gives you all the advantages of a NoSQL database without sacrificing data integrity or performance.

- ACID Transactions over multiple documents and multiple collections
- Single-node *and* Cluster-wide ACID transactions
- Transactions are ACID by default – no associated performance loss





# Secure By Default

RavenDB has been carefully designed to be secure by default. No need for complicated documentation or processes. Your data is safe in transit and at rest.

- X.509 certificates are used for authentication and authorization
- Use of established security protocols such as TLS and HTTPS
- No default usernames or passwords
- Ports are closed by default
- Data can be encrypted at rest
- Backups are encrypted



# High Availability

RavenDB was built to be a distributed database, with no single point of failure. Like an octopus: if an arm goes numb, you still got lots to work with.

- Master-master setup lets you read and write to every node. If nodes lose connection with one another or a local node goes offline, your database will stay operational.
- In a cluster of five nodes, any two nodes can be down at once and the cluster will still be fully operational
- Even with just one node available, your application will be able to read and write to the database
- Clusters react and accommodate to usage patterns and problems to keep your application up, running, and fast.



# Advanced Query Engine

Find exactly what you are looking for with easy to use querying functionality.

## RavenDB uses Raven Query Language (RQL)

- A simple and human-friendly declarative language inspired by SQL

```
from Employees where FirstName = 'Nancy'
```

- Supports JavaScript, making it more powerful than SQL
- You can create server-side JSON projections so your database can serve you view models that can be used right away



- Patching (update) operations support JavaScript
- Built-in support for paging
- Full-text search with suggestions, geospatial searching, result boosting, facets, and complex aggregations with Map/Reduce

# RavenDB Management Studio

The Management Studio is a fully loaded graphical user interface (GUI). It lets you monitor operational and performance metrics, and perform tasks without need for coding.

## The RavenDB Management Studio is:

- Highly intuitive, with a point and click interface
- Able to create code, set up queries, monitor indexes and Map/Reduce aggregates in our all-in-one interface
- A native part of RavenDB that comes free with every license: Community, Professional, and Enterprise
- A web application served by the database
- Multiplatform, so there's no need to install anything



# Compliance

RavenDB is built with compliance in mind and works flawlessly with major industry standards.

## Easy compliance with:

- **PCI** (Payment Card Industry-Data Security Standard)
- **HIPAA** (Healthcare Insurance Portability and Accountability Act)
- **GDPR** (General Data Protection Regulation)
- **CCPA** (California Consumer Privacy Act)



# Testimonials

*One of my engineers was freaking out when he updated the size of the RavenDB nodes without any downtime. Apparently that was a multi-day coordinated effort recently with our MongoDB setup.*

*Using RavenDB, it took **six months to go from the drawing board to full release** of our product. If we went with SQL, it would have taken a year.*

# RavenDB



# MongoDB

- ✓ Fully transactional from the start
- ✓ Improving performance for over a decade in the ACID framework for over a decade.
- ✓ All queries always use an index. If one does not exist, RavenDB will create an index for you.
- ✓ Aggregation queries are very cheap and fast, Map/Reduce indexing is done ahead of time.
- ✓ RQL – RavenDB’s query language – is very similar to SQL, with JavaScript support.
- ✓ Support for complex patching
- ✓ Powerful JavaScript-empowered indexes and queries
- ✓ Master-Master cluster replication let’s you work offline and get the most out of a distributed system.
- ✓ Automatic and Aggressive caching supported
- ✓ Safe by Default
- ✓ Fully functional free license

- × Optional transactions from 2018
- × Queries don’t always use indexes, and may need to perform (very slow) full scans.
- × Aggregation queries require computation during query time.
- × No support for pre-computed Map/Reduce operations
- × Mongo queries are based on JSON syntax. They are very complicated to create and understand.
- × No support for complex patch operations
- × Master-worker cluster replication creates a single point of failure.
- × Client-integrated caching not supported
- × Not safe by default, number of high-profile data breaches.
- × Advanced features only in paid packages

# RavenDB



# Couchbase

Use Case: Rakuten Kobo migration

In version 4, RavenDB was 4x faster than Couchbase

## from Couchbase ...

- CouchDB Cluster: 12 nodes (12 core, 96 Gb RAM)
- Total Cores: 144
- Total RAM: 1,152 Gb
- Total docs: 286,120,876
- DB size: 3.5 TB
- Additional ElasticSearch server



## ... to RavenDB

- RavenDB Cluster: 3 nodes (4 core, 32Gb RAM)
- Total Cores: 12
- Total RAM: 96 Gb

**80%**  
cloud cost  
savings under  
load

## Bottom line

- Significantly faster - 800+ req/sec with latency in single digits ms
- No need for ElasticSearch anymore
- Whole RavenDB cluster hardware is equal to a single Couchbase node
- Increased stability - seamless handling of failed nodes



# RavenDB



# DynamoDB

- ✓ No throughput quota
- ✓ No limits on number of collections
- ✓ No limits on number of indexes per collection
- ✓ Document size limit: 2GB
- ✓ No limits on the amount of returned data
- ✓ Full-text search functionality of Lucene built-in, including spatial queries and aggregation support.

- × Provisioned mode: default throughput quota. Autoscaling is possible, but slow
- × Tables: 256 per AWS region
- × Table indexes: 20 global + 5 local
- × Item size limit: 400kB
- × Table scans: 1MB of return data from the table
- × In worst case scenario, DynamoDB will return TWO table rows of max size per ONE table scan
- × Full text search: not supported

# RavenDB



# CosmosDB

- ✓ Completely predictable and transparent costs
- ✓ Free community license
- ✓ Supports ACID transactions across multiple collections
- ✓ Backups are manageable with transparent policy and configurable retention

- × Pricing based on the number of requests
- × 30-days free trial
- × Does not support multi collection transactions
- × Backups are not configurable with retention of just two

**Questions?**



 **RAVENDB**



Thank you