Couchbase Mobile for Edge Computing

FAST, ALWAYS-ON EDGE AI FOR MOBILE AND IOT APPS

Key benefits

- Enterprise class distributed cloud database (hosted or self-managed)

- Developer friendly embedded database for mobile and IoT apps

- Support for iOS, Android, .Net, Java, C-api for custom embedded devices

- SQL support and vector search from cloud to edge

- Bidirectional data sync between the cloud and edge devices

- Always on experience even without network availability

- Scale from hundreds to millions of users

- Built-in enterprise grade security to safeguard data

Build fast, reliable, secure AI-powered edge apps that work even without the internet.

Mobile and IoT apps at the edge that rely only on the cloud for data and AI processing are dependent on the internet. When it slows or stops, so do the apps that use it, frustrating users and costing you downtime. With Couchbase Mobile you can build offline-first applications that seamlessly sync data between the cloud and edge, and directly between mobile devices, while automatically resolving data conflicts. Save transfer costs and bandwidth by using delta sync technology to sync only data that has changed. Couchbase Mobile supports edge computing with a full-featured embedded database that enables an always-on experience with guaranteed data availability, even without internet connectivity. It also includes a synchronization gateway that provides secure data sync between mobile devices and the backend database.

With support for key-value, SQL, vector search, full-text search, scopes and collections, predictive queries that leverage machine learning models, and asynchronous eventing capabilities, Couchbase Mobile allows developers to build AI-powered user experiences that run right within mobile and edge apps. Built-in data synchronization, end-to-end data encryption, and fine-grained access control ensure privacy and security. Couchbase Mobile plugs right into your AI ecosystem, allowing you to call local or remote ML and LLM models for GenAI features within your apps.
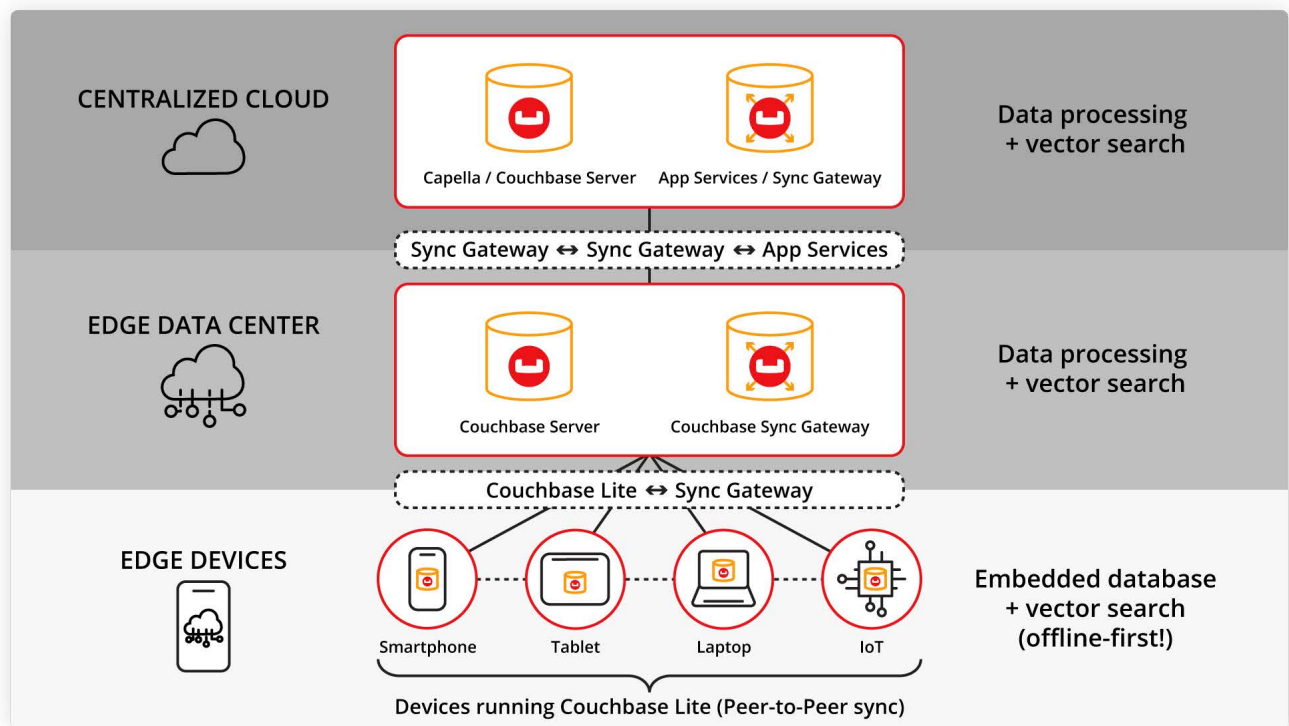
Architecture

COUCHBASE LITE
A full-featured embedded NoSQL JSON document database that enables offline-first apps with key-value, query, vector search, full-text search, eventing, and database encryption capabilities.

SECURE DATA SYNCHRONIZATION GATEWAY
A secure gateway for synchronization of data between the edge devices and the backend data store. Choose from fully managed sync with **Capella App Services**, or deploy and host Couchbase **Sync Gateway** yourself.

COUCHBASE DATABASE
A distributed NoSQL JSON document database in the cloud with support for SQL, vector search and analytics. Choose from **Couchbase Capella**, the fully managed and hosted Database-as-a-Service, or deploy and host **Couchbase Server** yourself on premises or in any public or private cloud.

CENTRALIZED CLOUD

Capella / Couchbase Server   App Services / Sync Gateway

Data processing + vector search

Sync Gateway ↔ Sync Gateway ↔ App Services

EDGE DATA CENTER

Couchbase Server   Couchbase Sync Gateway

Data processing + vector search

Couchbase Lite ↔ Sync Gateway

EDGE DEVICES

Smartphone   Tablet   Laptop   IoT

Embedded database + vector search (offline-first!)

Devices running Couchbase Lite (Peer-to-Peer sync)

Key enablers

- Ability to securely store and process data and AI models either locally embedded within devices or co-located in distributed data centers at the edge. Guarantee real-time responsiveness and business uptime by keeping data closer to the applications that consume it.

- Ability to securely sync data from any cloud-to-edge device or edge data center. Leverage comprehensive sync technology to guarantee data integrity.

- Ability to operate in environments with low/no internet connectivity for extended periods of time. Guarantee an always-on experience for users.

Enterprise-grade security
Safeguard data and alleviate privacy concerns with built-in enterprise-grade encryption at rest and in transit. Isolate and secure data to comply with privacy and sovereignty regulations, sensitive data never has to leave the edge.

Speed and responsiveness
Guaranteed low latency and sub-millisecond data access times, regardless of internet bandwidth.

Deploy on premises, in any cloud, or at the edge
Deploy edge computing applications easily on any public cloud to gain greater agility. Enterprise users can deploy the same stack on premises so developers and QA teams can be more productive in their software development life-cycle.

lotum

Lotum uses Couchbase Mobile to provide a consistent and always-on experience for the millions of monthly active users of their most popular game title. Gamers can play wherever they go, even without internet.

Highly personalized
travel application

Real-time product
catalog application

Transforms patient
experience

Gaining new insights
in brain injury

Offline-first point
of sale solution

Enable cloud-to-edge AI with Couchbase Mobile

AI SUPPORT
Vector search on-device enables semantic and similarity search, as well
as LLM integration and RAG with no dependencies on the internet. Run AI
locally against data in your local database for privacy.

UNPARALLELED PERFORMANCE AT ANY SCALE
Deliver an always-on experience even with unreliable networks and dropped
connections. Scale from hundreds to millions of users with the flexibility to
add capacity at every tier – including the client tier (Couchbase Lite), middle
tier (Sync Gateway), and storage tier (Couchbase Server).

EASE OF MANAGEMENT
Safeguard data with built-in enterprise-grade security for the full stack.
Encrypt data at rest as well as in transit. Apply fine-grained access control
policies to ensure that only authorized users have access to relevant subsets
of data.

Learn more

To learn more, contact your Couchbase sales representative
today or visit:
www.couchbase.com/products/mobile
www.couchbase.com/downloads#extendwith-mobile

Couchbase

Modern customer experiences need a flexible database platform that can power applications spanning from cloud to edge and everything in between. Couchbase's mission is to simplify how developers and architects develop, deploy and run modern applications wherever they are. We have reimagined the database with our fast, flexible and affordable c loud database platform Capella, allowing organizations to quickly build applications that deliver premium experiences to their customers – all with best-in-class price performance. More than 30% of the Fortune 100 trust Couchbase to power their modern applications. For more information, visit www.couchbase.com and follow us on X (formerly Twitter) @couchbase.