



How Enterprises are using Couchbase

Perry Krug – Principal Solutions Architect

- Couchbase company overview
- What's driving NoSQL adoption
- How customers are solving problems with Couchbase
- What makes Couchbase unique

Couchbase at a glance



NoSQL performance, availability & scalability leader

Focused on innovation

225+ employees

100+% year-over-year customer growth: 25 in 2010, to 430+ in 2014

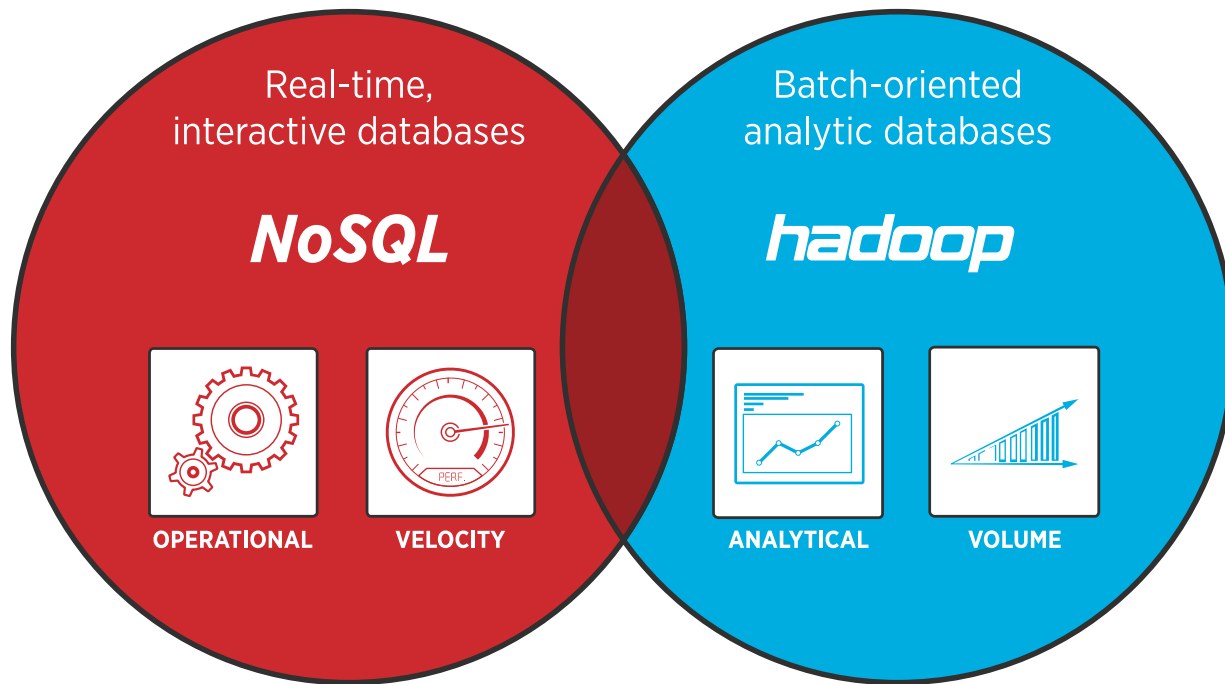
Global presence



United States
United Kingdom
France
Germany

Israel
India
China
Japan

Big Data = Operational + Analytic (NoSQL + Hadoop)



- Online
- Web/Mobile/IoT apps
- Millions of customers/consumers

- Offline
- Analytics apps
- Hundreds of business analysts

Relational databases struggle to meet today's requirements



- Challenged to deliver sub-msec response times
- Difficult and expensive to massively scale
- Unable to process massive data at high speed
- Rigid schemas, designed for structured data

What analysts are saying:

"New requirements are **pushing RDBMS products beyond their limits**. NoSQL technologies have emerged to address those requirements that go beyond the capabilities of traditional RDBMSs."



What customers are saying:

"Couchbase gives us **greater scalability and blazing performance**. We now have the ability to simply and fluidly increase capacity, enabling us to seamlessly respond to the needs of the application."



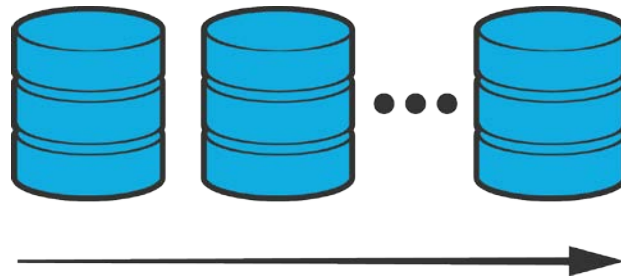
Couchbase meets today's & tomorrow's requirements



Consistent performance at scale



Easy, affordable scalability



High availability



Flexible data model



Major enterprises across industries are adopting Couchbase



Technology



Retail & Apparel



Communications



E-Commerce & Digital Advertising



Finance & Business Services



Travel & Hospitality



Games & Gaming



Media & Entertainment





How enterprises are using Couchbase to drive business value

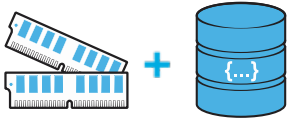
Enterprises use Couchbase to enable key objectives



Profile Management



Caching



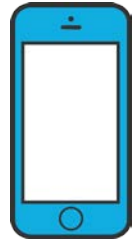
360 Degree Customer View



Internet of Things



Mobile Applications



Content Management



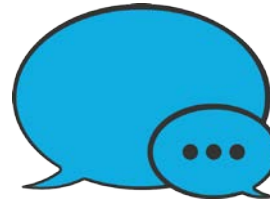
Catalog



Real Time Big Data



Digital Communication



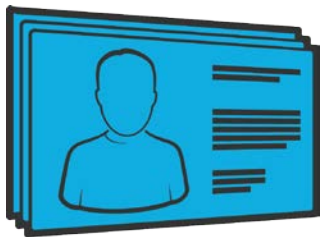
Fraud Detection



Couchbase Server use case spotlights



Profile Management



Caching



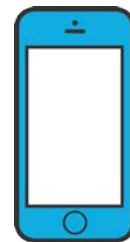
360 Degree Customer View



Internet of Things



Mobile Applications



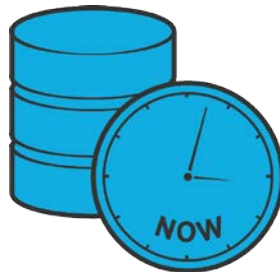
Content Management



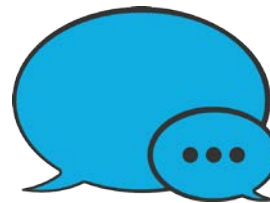
Catalog



Real Time Big Data



Digital Communication



Fraud Detection

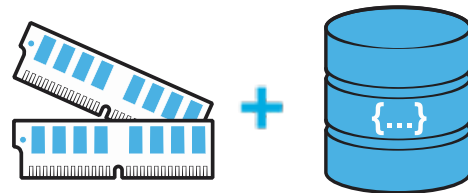


The problem

Provide low latency and high throughput access to a variety of data types. Alleviate load on backend systems.

Application Requirements

- Lots of users accessing different datasets
- Data in varying formats: HTML, JSON, protobuf
- High read performance
- Uptime critical



Challenges with other caching technologies

- Complicated to setup and monitor
- Not persistent
- Restriction of supported data types
- Not truly distributed or clustered (i.e. ehcache)
- Poor performance under load

The Couchbase Solution

- Based on memcached = fast!
- Replicated and persistent with auto-failover
- Fully distributed and clustered with “push button” scaling: easy, inexpensive
- Support for binary and JSON data types



- Concur.com
- Provide fast access to expense reports, product and travel information

The Couchbase Advantage

Massive speed and scale that's easy to manage

The problem

Massive and spikey user traffic to small bits of data supporting web experience

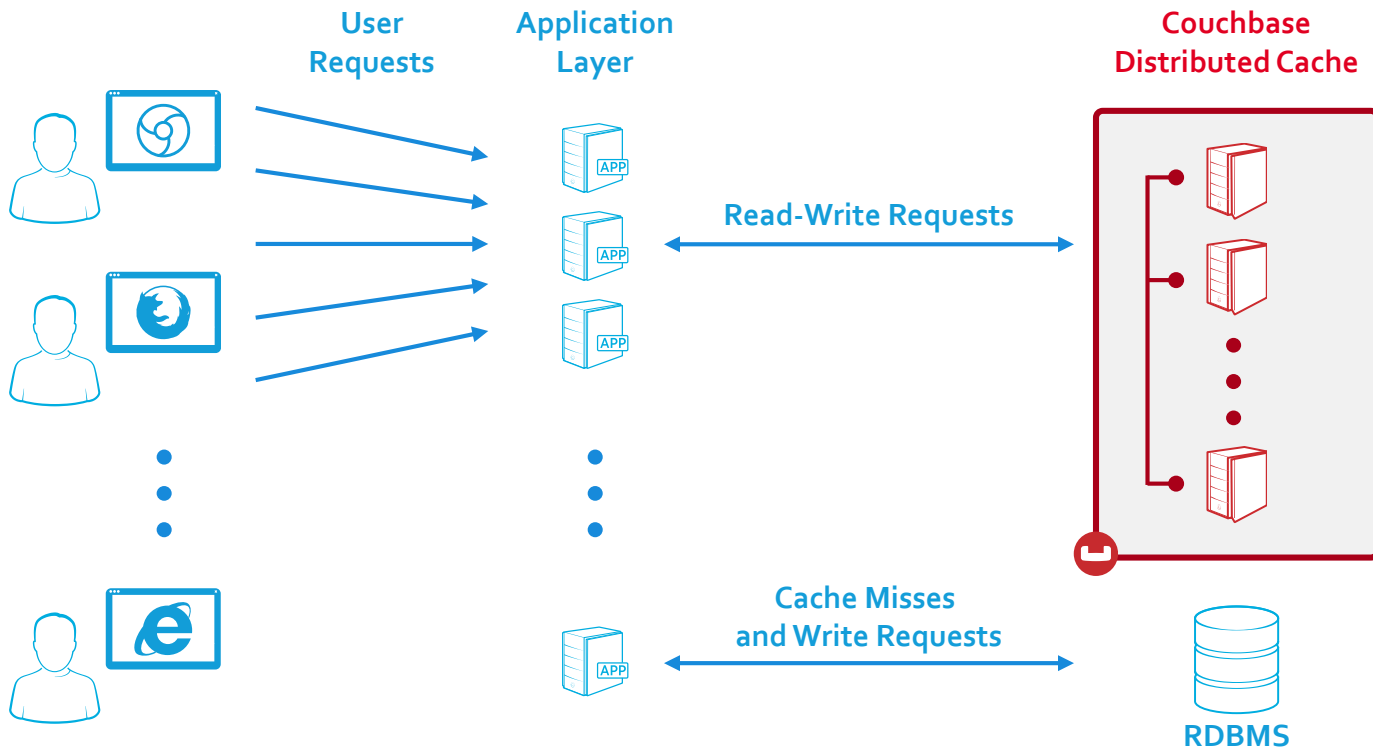
- No existing caching solution
- New applications constantly coming online
- Lots of interactive user traffic: one write followed immediately by many reads

The solution

Deploy Couchbase Server as standardized distributed caching layer

- Compatible with memcached, highly optimized for latency and throughput
- Shared nothing, replicated and persistent for reliability
- Support for JSON as well as any binary data type
- Shared-nothing, replicated and persistent architecture

High Availability Caching at Concur



Objective

Reduce inventory, increase cross-sell, and facilitate regulatory compliance, via an easy to maintain and update repository of product and other data

Business requirements

- Store large volume of different data types/attributes: SKUs, part numbers, descriptions, metadata, etc.
- Manage numerous, rapid updates
- Deliver fast response for great customer experiences

Technical requirements

- Flexible data model
- High read/write throughput
- Low latency
- Scalability to support large data volume



The Couchbase Solution

- **Flexible JSON data model** – easily adapts new data types and attributes on the fly
- **Integrated cache** – enables high throughput
- **Push-button scalability** – easily scales to support massive data volumes

Background and Business Context

- Largest UK retailer
- Adopting service-oriented IT architecture for greater business agility

Challenges & Requirements

- Product data currently stored in multiple relational databases
- Need to enable fast, easy access to, and sharing of, product data across multiple channels throughout the company
- Store and update product data for 10M items
- Support frequently changing data and multiple data structures

Objective

- Provide centralized, easy to maintain and update, product catalog service



Product Catalog with Couchbase @ Tesco



Couchbase Solution

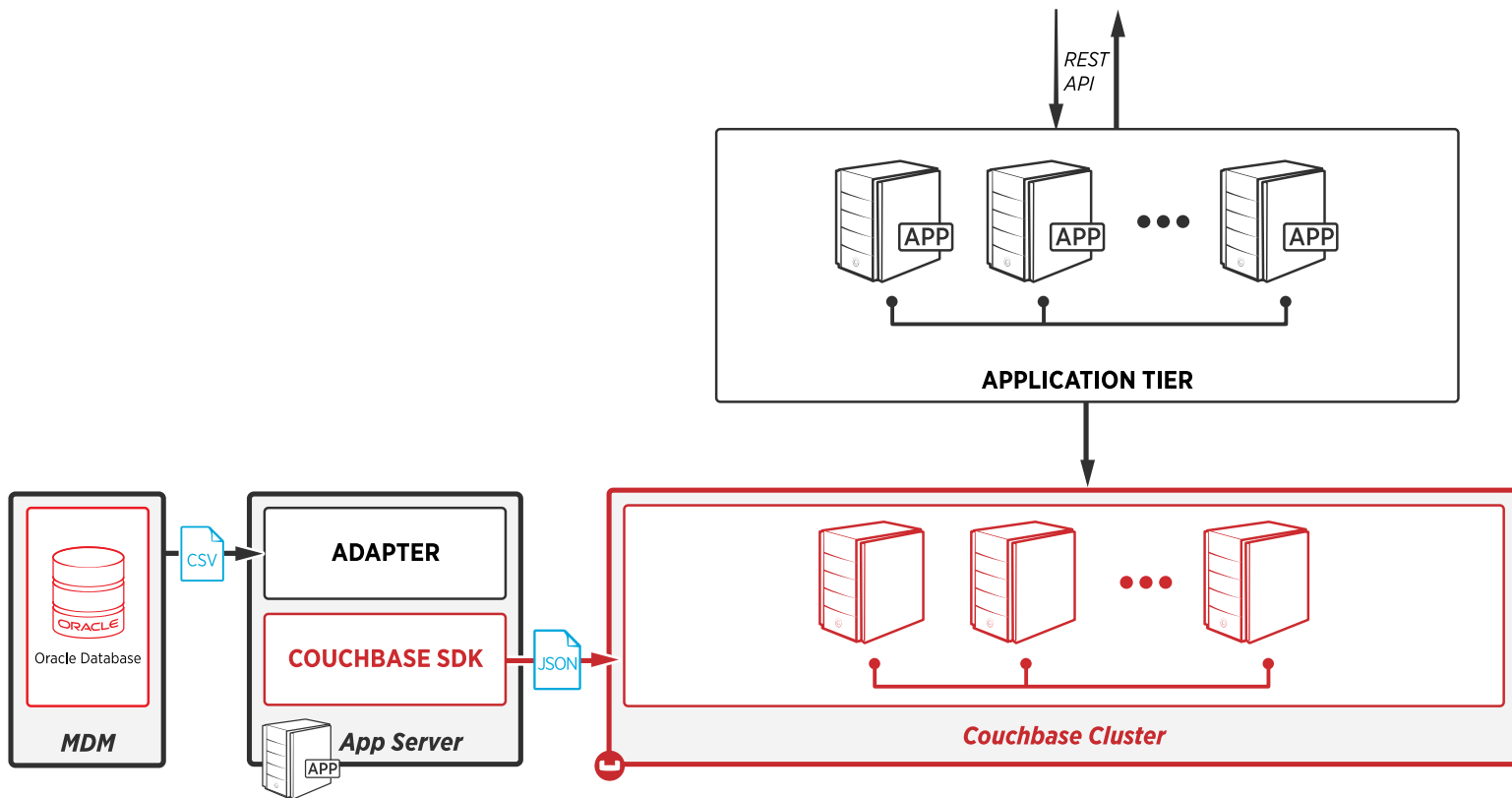
- Deploy Couchbase Server as consolidated product catalog database
- Data ingested via REST API from multiple MDM feeds (CSV, XML)
- JSON document model captures multiple data structures: SKUs, product and accounting hierarchies, GTINs (barcodes, ISBNs, etc.)

Results

- Easily and inexpensively scales to support 10M products and 35K requests per second



Product Catalog with Couchbase @ Tesco



Objective

Deliver new products and services, create new revenue opportunities, and drive agility by connecting with and harnessing data from millions of devices



Business requirements

- Manage massive datasets (e.g. billions of data points)
- Interact with numerous devices, sometimes unconnected
- Capture new and evolving data types at high speed

Technical requirements

- Scale to millions of devices, billions of data points
- High throughput
- Synchronize data between device and cloud
- Data model flexibility

The Couchbase Solution

- **Push-button scalability** – easily scales to support massive data volumes
- **Integrated cache** – enables high throughput
- **Embedded JSON database with automated sync** – supports connected and unconnected devices
- **Flexible JSON data model** – easily adapts new data types and attributes on the fly

Background and Business Context

- Enterprises are seeing significant growth in the number and types of devices running on their corporate networks
- Enterprise customers can take advantage of data to monitor and better manage network devices

Objective

- Enable new service offering for Verizon enterprise customers to manage devices connect to their company's network

Challenges & Requirements

- Collect and store data in real time from 10K's-100K's of devices on a single customer's network
- Analyze data for usage statistics and patterns
- Provide near real-time insights and reports into device usage



Couchbase Solution

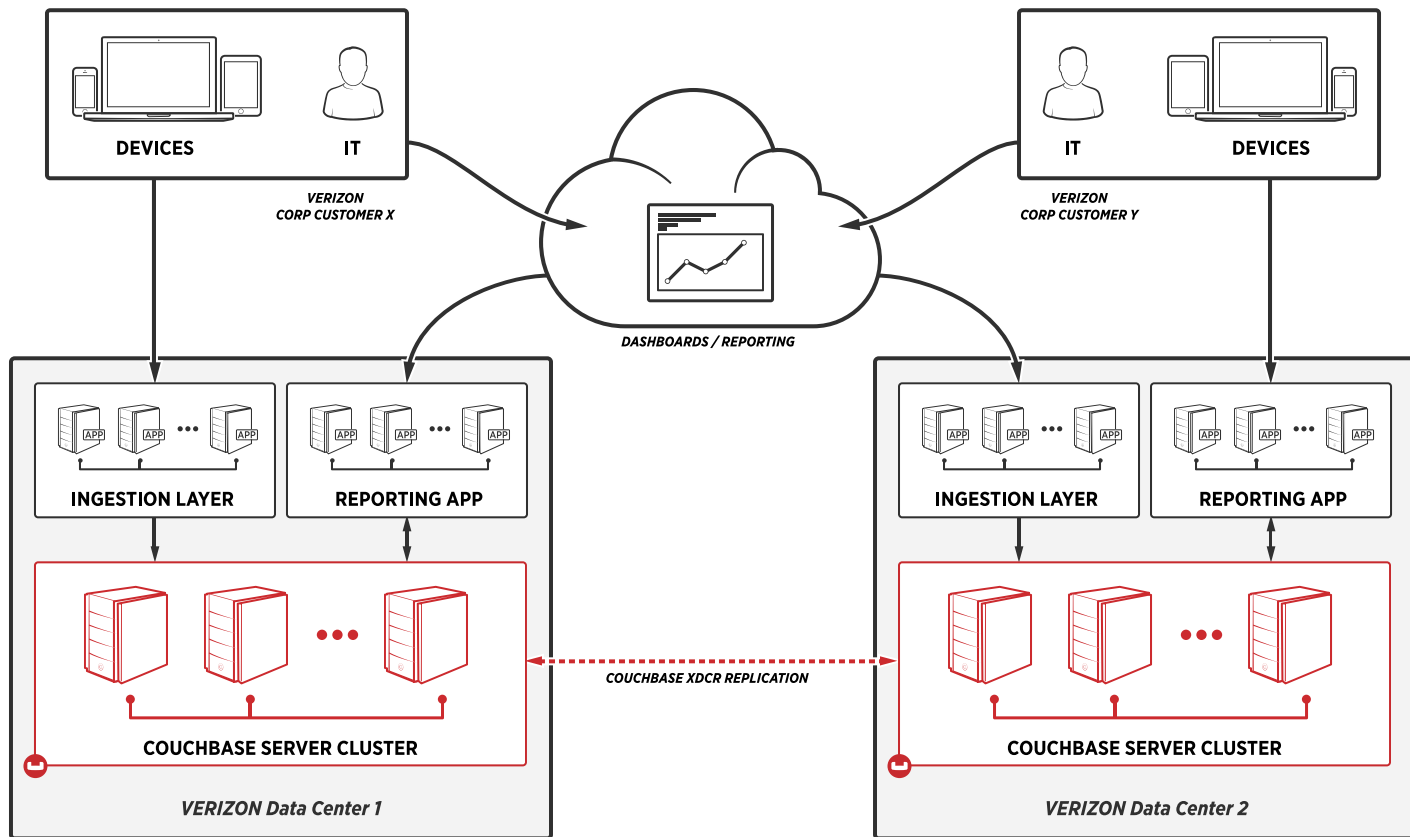
- Deploy Couchbase Server to store data and serve reports on network devices
- Couchbase Server ingests data at high speed, from any kind of connected device: alarms, locking systems, modems, solar panels, cash registers, etc.

Results and Outlook

- Stream-based indexing enables fast views and reports
- JSON data model easily handles any data type, new data types



Internet of Things with Couchbase @ Verizon

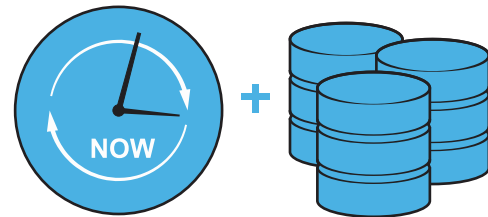


Real Time Big Data



Objective

Drive revenue, customer satisfaction, and operational efficiency by leveraging insights from big data analytics in real time



Business requirements

- Manage massive data volumes at high speed
- Store and manage numerous and changing data types
- Export/import data to/from analytics platforms

Technical requirements

- Scalability and throughput
- Data model flexibility
- Integrate with Hadoop

The Couchbase Solution

- **Push-button scalability** – fast, easy and inexpensive to scale to any size
- **Integrated cache** – enables fast performance and high throughput
- **Flexible JSON data model** – easily adapts new data types and attributes on the fly
- **Real time Hadoop integration via in-memory streaming** – easily export data and import analytics results

Background and Business Context

- Leading provider of online payment services
- 130m+ active accounts in 190+ countries, 25 currencies
- 10TB data, 1B documents

Objective

- Provide business users with real time reports and visualizations of user interaction data

Challenges & Requirements

- Need to capture and analyze very large amounts of website data in real time to produce reports and visualizations
- High throughput, low latency
- Must integrate with other big data technologies (Hadoop and Storm)



Real Time Big Data with Couchbase @ PayPal



Couchbase Solution

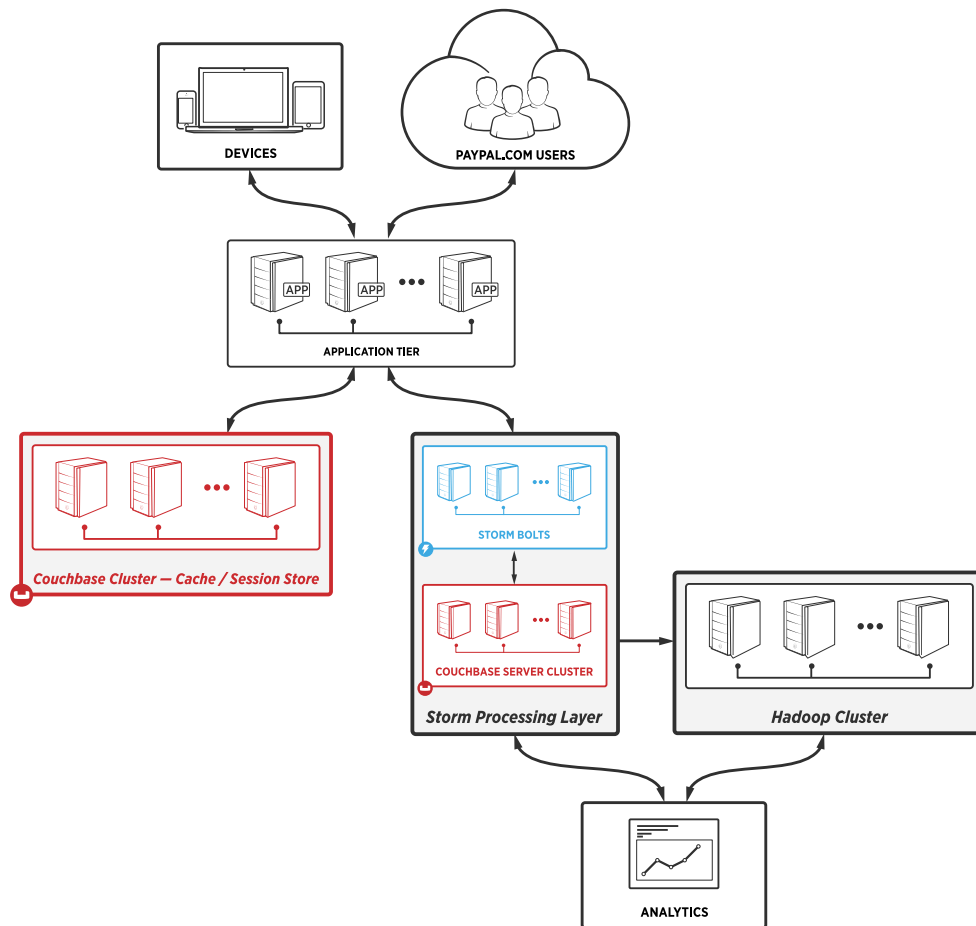
- Couchbase Server deployed to capture, store, and process real time web data
- Ingests data (via Storm) from multiple inputs, including mobile, web, and other services, storing data as JSON documents
- Integrates with Hadoop to pass data for additional offline analytics

Results

- Consistent low latency (sub 10-msec response)
- High availability enabled by distributed caching and XDCR
- Views for business users are generated in under 1 minute, based on 10-minute data collection intervals



Real Time Big Data with Couchbase @ PayPal



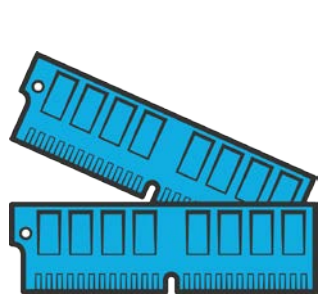


How Couchbase technology solves problems

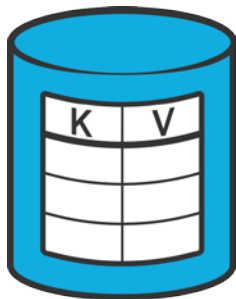
Couchbase provides a complete Data Management solution



Multi-purpose capabilities support a broad range of apps and use cases



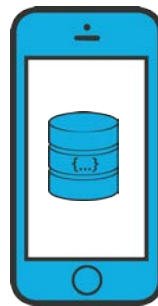
**High availability
cache**



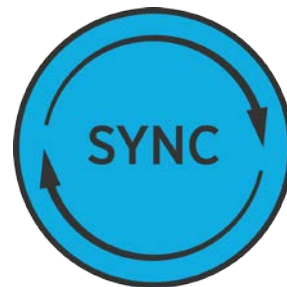
**Key-value
store**



**Document
database**



**Embedded
database**

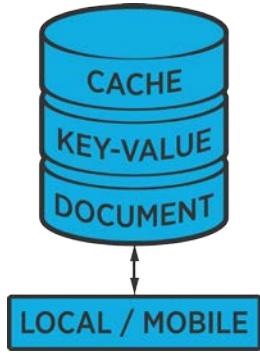


**Sync
management**

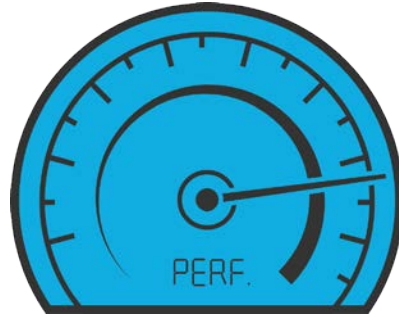


Enterprises often start with cache, then broaden usage to other apps and use cases

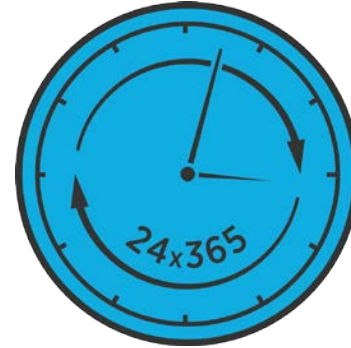
Why do enterprises choose Couchbase?



**Multi-
purpose**



**Performance/scala
bility leader**

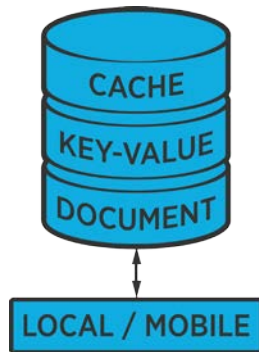


**Always-on
availability**



**Simplified
administration**

Multi-purpose database supports many uses



Tunable built-in cache

- Consolidated cache and database
- Tune memory required based on application requirements

Flexible schemas with JSON

- Represent data with varying schemas using JSON on the server or on the device
- Index and query data with Javascript views

Couchbase Lite

- Light weight embedded DB for always available apps
- Sync Gateway syncs data seamlessly with Couchbase Server



Auto Sharding

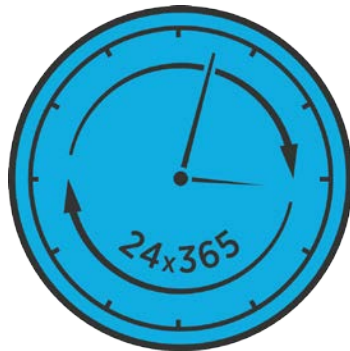
- No manual sharding
- Database manages data movement to scale out – not the user

Memory-memory XDCR

- Market's only memory-to-memory database replication across clusters and geos
- Provides disaster recover / data locality

Single Node Type

- Hugely simplifies management of clusters
- Easy to scale clusters by adding any number of nodes



High Availability

- In-memory replication with manual or automatic fail over
- Rack-zone awareness to minimize data unavailability

Disaster Recovery

- Memory-to-memory cross cluster replication across data centers or geos
- Active-active topology with bi-directional setup

Backup & Restore

- Full backup or Incremental backup with online restore
- Delta node catch-ups for faster recovery after failures



Online upgrades and operations

- Online software, hardware and DB upgrades
- Indexing, compaction, rebalance, backup & restore

Built-in enterprise class admin console

- Perform all administrative tasks with the click of a button
- Monitor status of the system visual at cluster level, database level, server level

Restful APIs

- All admin operations available via UI, REST APIs or CLI commands
- Integrate third party monitoring tools easily using REST



Thank you.