



Highlights

Cloudant is a massively scalable, always-on NoSQL data layer available as a fully managed DBaaS, or managed by you on-premises

- Massive read/write scalability
 - Non-stop data availability
 - Faster development cycles
 - Reduced IT/DBA overhead
 - Escape Cloud lock-in
-

IBM Cloudant Data Layer Local Edition

Grow bigger, innovate faster on any private, public, or hybrid cloud platform

Database for the digital experience era

Your mission is to create new digital experiences that extend your business to the phones people carry, the technology they wear, and the vehicles they drive. If you nail the user experience you see viral growth, which leads to increased customer loyalty and better business. Fast, non-stop delivery of data to and from users is critical to success. Therefore, the database software you choose is also key.

IBM® Cloudant Data Layer Local Edition (Cloudant Local) is a database management system (DBMS) that runs across a cluster of servers to power mobile, web, and Internet of Things (IoT) applications. Cloudant Local helps developers create richer digital experiences for users by delivering data to devices non-stop, wherever and whenever users need it. As your business grows, Cloudant Local makes it easy to scale database infrastructure along with it.

The power of DBaaS

Launched in 2009, the Cloudant Data Layer originated as a NoSQL database delivered as a fully managed Web service. Today, Cloudant's database-as-a-service (DBaaS) handles billions of transactions per day for hundreds of customers worldwide. That is petabytes of data delivered non-stop for companies. With innovative enterprises and agile startups alike depending on Cloudant, the service evolved to prioritize high availability, scalability, and, above all, data durability. Downtime and data loss are not options for customers, nor are they acceptable for a DBaaS provider.

Cloudant Local packages up the always-on technology of Cloudant with streamlined DBaaS operations tooling and all the institutional knowledge that Cloudant developer-operators have acquired over the years to put the power of DBaaS in the privacy of your own data centers.



Ideal use cases for Cloudant Local

Companies of all sizes use Cloudant to manage data for large or fast-growing web and mobile apps in ecommerce, online education, gaming, financial services, networking, and other industries. Cloudant is best suited for apps requiring an operational data store to handle:

- A massively concurrent mix of low-latency reads and writes
- Managing multi- or un-structured data
- Mobile users and things – geospatial data and mobile sync for offline data access
- Fault-tolerant database performance
- Distribution and synchronization of data across multiple data centers and devices

What makes Cloudant Local distinct

Besides its origins as a fully managed DBaaS, Cloudant provides several important differentiators:

Elastic scalability

Cloudant Local runs on a cluster of inexpensive servers. If you need to increase database traffic, you just add servers to the cluster, or take them away if database traffic is shrinking. This is done on a “pay-as-you-grow” basis to help you align costs with application growth. These changes are made without downtime and with Cloudant dev-ops tools that make re-partitioning your database easy as the cluster resizes.

Multi-structured data

If your app manages data that does not fit into tabular rows and columns in a relational database – data like JSON, full-text, media files, etc. – or if you expect a lot of changes to your data model, then Cloudant is a better fit. It is not limited by rigid schemas like RDBMSs have; each Cloudant database stores a collection of self-describing, variably structured JSON documents.

Cloudant is also excellent at storing videos, images, and other binary attachments to JSON objects. You can store different JSON structures in the same database, without having to redesign schemas. This flexibility speeds development cycles by eliminating the time it takes to redesign relational schemas and migrate data when your data model changes.

Multi-data center and data mobility

Many projects replicate data across data centers or between mobile devices in order to push data closer to users so they can access it faster. Managing distributed data this way also makes it available from multiple locations in case a cluster, or even an entire data center, fails. For mobile apps, data can be stored locally to eliminate the network connectivity issues that plague data access on mobile devices.

Cloudant automates the difficult problem of distributing and synchronizing changes across replicas of data stored at all locations. In Cloudant, all copies of your data are available for reads and writes. On the other hand, most other relational and NoSQL databases can replicate read-only copies of data to multiple locations or devices.

Requirement	Cloudant	RDBMS
Elastic scalability	Easy	Hard
Multi-structured data	Easy	Hard
Multi-data center	Easy	Hard
Data mobility	Easy	Hard

Adaptable deployment options

To handle the influx of massive amounts of data in modern applications, your data layer needs to be in lockstep with your development roadmap. Cloudant helps enable flexible deployment options to efficiently manage today’s ever-changing data.

Private Cloud	Public Cloud	Hybrid Cloud
Run Cloudant Local in the privacy of your own data centers and manage it yourself.	Run Cloudant Local on public cloud platforms or use Cloudant Managed DBaaS to extend the reach of your data cloud into additional data centers and geographies.	Spread your data cloud across a mix of private and public cloud platforms and change over time to optimize cloud costs, reach, service levels and compliance. Cloudant makes this a snap by connecting Cloudant Local and Cloudant Managed DBaaS databases together; Cloudant automatically synchronizes changes across them in batch or in near real-time

Cloudant Local requirements overview

Server nodes

Cloudant Local requires five (5) machines to create a fully functional Cloudant cluster that ensures 24 x 7 availability.

- 1 primary load balance
- 1 failover load balancer
- 3 database servers

Software specifications

Cloudant Local runs on the following 64-bit operating systems:

Debian-derived Linux distributions:

- Debian 6.0.10
- Ubuntu Server 12.04.4

Red Hat-derived Linux distributions:

- Red Hat Enterprise Linux Server 6.5
- Community Enterprise Operating System (CentOS) 6.5

Best practice is for all server nodes to run the same OS.

Hardware specifications

Database (DB) nodes

Minimum requirements:

Four (4) cores and eight (8) threads, such as Xeon E3-1270 V2, eight (8) GB of RAM and one (1) gigabit network.

Reference specifications:

For larger implementations, the minimum requirements are 12 cores and 24 threads, such as dual Xeon E5 2620, 64 GB of RAM, local SSD drives to meet data volume requirements of your usage, and a one (1) gigabit network.

Load Balancer (LB) nodes

Minimum requirements:

Dual core processor and 4 GB RAM, 500 GB local hard drive, and a one (1) gigabit network.

Reference specifications:

For larger implementations, the minimum requirements are a quad core processors and 8 GB RAM, 1 TB local hard drive, and a one (1) gigabit network.

The following diagram shows the basic architecture of Cloudant Local, including two load balancers (lb1 and lb2), and three database nodes (db1,db2,and db3).

In the diagram, the lines and accompanying text identify the communication paths and ports that are used by the components of Cloudant Local.

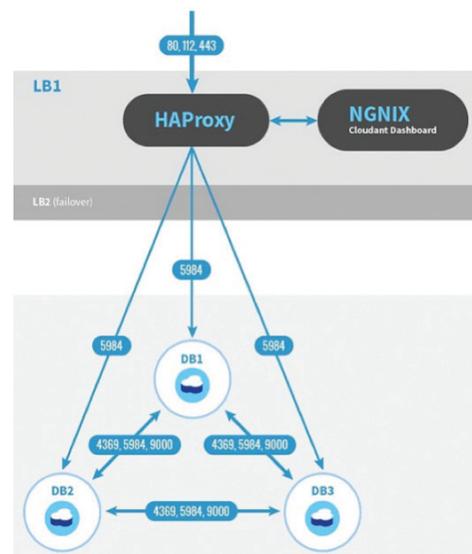


Figure 1: Cloudant Local architecture diagram and ports

Cloudant features

Flexible data storage

- Store data as self-describing JSON “documents”
- Excellent for variably- or un-structured data, and for apps with fast-changing data models
- Add, change or remove fields without having to redesign the database
- Attach any file type to JSON docs

Scalable, durable database transactions

- Built for mixed read/write, operational workloads
- Automatic data partitioning
- Multiple copies of data saved on different nodes, data centers or even cloud providers for fault-tolerance
- IOQ technology enables custom prioritization of transaction types

Easy-to-use API and integration

- GET, PUT, index and query data via a RESTful JSON API
- Define indexes & complex analytics via MapReduce
- Access directly from browser or via an app server
- Libraries available for dozens of languages
- Works with 3rd party read caches and write queues
- Integrate with Hadoop, and other tools or data sources via REST API, replication, or export/import of JSON and CSV files

Advanced data indexing service

- Add advanced data processing to your apps very simply, and without having to use multiple databases or write complex integration code
- Incremental MapReduce for near real-time analytics
- Lucene-powered full-text search
- Advanced 2D and 3D geo-spatial indexing and querying

Always-on data delivery

- Replicate and sync data...
 - Across data centers
 - Across public and private cloud platforms
 - Between Cloudant and mobile devices
- Data is always available, even if the network is not (off-line mobile app usage, etc.)
- Geo-load balancing connects users to the closest data source - lower read/write latency
- Multi-master architecture – Read and write to any replica. Cloudant keeps them all synchronized
- Filtered replication – selectively replicate different data sets to different target locations or devices



Getting started with **Cloudant Local**

Cloudant is available as a fully managed NoSQL database as a service (DBaaS) for fast, turnkey provisioning, and worry-free data management. It is also available as Cloudant Local, which puts the power of the Cloudant DBaaS in the privacy of your data centers. You can even connect Cloudant Local and Cloudant Managed DBaaS databases together to form hybrid cloud databases for the greatest balance of cloud cost, reach, performance, and compliance control.

Contact us at <http://cloudant.com/cloudant-local-info> to learn more or to request a Cloudant Local evaluation.

For more information

For more information, please contact your IBM representative or IBM Business Partner, or visit: cloudant.com/ or ibm.com/cloudant



© Copyright IBM Corporation 2015

IBM Corporation
Software Group
Route 100
Somers, NY 10589

Produced in the United States of America
January 2015

IBM, the IBM logo, ibm.com and Cloudant are trademarks or registered trademarks of International Business Machines Corporation in the United States, other countries, or both. If these and other IBM trademarked terms are marked on their first occurrence in this information with a trademark symbol (® or ™), these symbols indicate U.S. registered or common law trademarks owned by IBM at the time this information was published. Such trademarks may also be registered or common law trademarks in other countries. A current list of IBM trademarks is available on the Web at "Copyright and trademark information" at: ibm.com/legal/copytrade.shtml. Other product, company or service names may be trademarks or service marks of others.

Microsoft, Windows, Windows NT, and the Windows logo are trademarks of Microsoft Corporation in the United States, other countries, or both.

This document is current as of the initial date of publication and may be changed by IBM at any time. Not all offerings are available in every country in which IBM operates.

The performance data and client examples cited are presented for illustrative purposes only. Actual performance results may vary depending on the specific configurations and operating conditions. It is the user's responsibility to evaluate and verify the operation of any other products or programs with IBM product and programs. **THE INFORMATION IN THIS DOCUMENT IS PROVIDED "AS IS" WITHOUT ANY WARRANTY, EXPRESS OR IMPLIED, INCLUDING WITHOUT ANY WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND ANY WARRANTY OR CONDITION OF NON-INFRINGEMENT.** IBM products are warranted according to the terms and conditions of the agreements under which they are provided.