

## Comparison of Cassandra and MongoDB

	Cassandra	MongoDB
Data Model	<p>Cassandra stores data in a wide column tabular store. Each row contains a unique identifier (or set of identifiers) as its primary key and a following set of columns. The primary key serves as a partition hash key as data is distributed across the cluster.</p>	<p><a href="#">MongoDB</a> stores documents in an optimized BSON format. Documents are grouped in databases and collections and returned as JSON documents with support for a large number of data types, including: strings, numbers, geo data, dates, arrays, decimal, nested objects, and binary data. Read more on data modeling with MongoDB <a href="#">here</a>.</p>
Indexing	<p>Cassandra offers standard built-in indexing as well as basic secondary indexes to index additional columns to allow queries filtering. Maintaining a large secondary index can potentially cause scalability issues as the cluster grows.</p>	<p>MongoDB supports many <a href="#">index types</a> for various use cases.</p> <p>Secondary <a href="#">indexes</a> on any field are available and supported in different types: Compound, Text, Geo, Wild Card, TTL, and Partial.</p>

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Query Language	Cassandra uses a proprietary language called CQL, which is similar to SQL. Applications can use different drivers provided mostly by third parties and a shell.	<p>MongoDB has a rich <a href="#">query language</a> called MQL. It supports a wide variety of modern <a href="#">native drivers</a> as well as a <a href="#">shell</a>.</p> <p>The data can be edited, deleted, inserted, and queried in many shapes and forms.</p> <p>The queries can use complex <a href="#">operators</a>. Additionally, the <a href="#">aggregation framework</a> allows you to aggregate data with many stages.</p>
Transactions	Cassandra does not support transactions.	MongoDB supports fully ACID compliant <a href="#">transactions</a> .
Concurrency	Cassandra isolates on a row-level. This means that a specific row for a specific partition can be operated simultaneously by one client. Cassandra also offers tunable consistency for writing, when a client changes its consistency level (one, quorum, all).	<p>MongoDB allows multiple database users to concurrently access the same data by managing a well defined <a href="#">concurrency</a> control.</p> <p>MongoDB uses document-level locking, so writes to a single document occur either in full or not at all, and clients always see consistent data.</p>

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		<p>Together with those mechanisms, MongoDB supports different <a href="#">read</a> and <a href="#">write</a> concerns for distributed clusters and retryable <a href="#">reads</a> and <a href="#">writes</a>.</p>
High Availability and Scalability	<p>Cassandra replicates its keyspace across the cluster nodes based on the keyspace replication factor.</p> <p>Since it's a multi-master ring, each node is holding a range of the partition key per table, while also hosting parts of other nodes' replicas.</p> <p>Each node coordinates reads to the correct node to retrieve or operate the data while it also needs to repair data that got out of consistency across</p>	<p>MongoDB was built from the ground up to support distribution of data using <a href="#">replication</a> and <a href="#">sharding</a> mechanisms.</p> <p><a href="#">Replica sets</a> host an identical copy of the data and elect a primary which receives all the writes, while other nodes are secondaries replicating all the data.</p> <p>Sharding allows you to easily scale your collections across multiple replica sets. With geo-zone sharding, you can also easily manage data sovereignty requirements.</p> <p>The ability to define specific shard keys and <a href="#">reshard collections</a> with zero downtime when a shard key is no longer optimal gives your</p>

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	the nodes. The only way to replace the default hash partitioning is by changing the partitioner component for the entire cluster.	application a huge advantage when managing massively distributed datasets at scale.
Security	<p>Apache Cassandra supports the following basic security methods:</p> <ul style="list-style-type: none"> <li>• TLS/SSL support for client connections</li> <li>• User authentication</li> <li>• User authorizations with roles</li> </ul>	<p>MongoDB supports enterprise-grade <a href="#">security</a> mechanisms to secure your MongoDB deployments. Most of them are on by default in <a href="#">MongoDB Atlas cloud offering</a>:</p> <ul style="list-style-type: none"> <li>• Authentication and authorization using built-in SCRAM or certificates</li> <li>• TLS/SSL, x509, and Client Side Field Level Encryption</li> <li>• Server Side storage engine encryption</li> <li>• LDAP and Kerberos integrations</li> </ul>

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		<p>Additionally, MongoDB cloud offerings have strong security compliance certifications. Read more on our <a href="#">trust center</a>.</p>
Mobile Support	<p>There is no specific Apache Cassandra version or tools for mobile development. There is also no specific mobile oriented driver or SDK.</p>	<p><a href="#">Realm</a> is a lightweight reactive object-store designed to work seamlessly with <a href="#">mobile frameworks</a>.</p> <p>MongoDB also offers an <a href="#">offline-first sync</a> service to Atlas clusters across various client platforms.</p> <p>Atlas Device Sync offers <a href="#">automatic conflict resolution</a> and strong eventual consistency. From Realm's perspective, changesets may arrive any time that connectivity allows.</p> <p><a href="#">Atlas Device Sync</a> allows data to sync seamlessly between MongoDB Atlas clusters and user or IoT devices.</p>

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Cloud Offerings	<p>Provided via third-party services on different clouds and platforms. Compatibility tests to the Apache Cassandra version need to be verified with each vendor.</p>	<p><a href="#">MongoDB Atlas</a>, the <i>database-as-a-service</i> platform, offers clusters in all three major cloud providers, starting from a free tier to a fully blown production <a href="#">cross-region and cross-cloud</a> cluster.</p> <p>Together with Atlas, you get the advantages of using <a href="#">Atlas App Services</a> application services, <a href="#">Charts</a>, and <a href="#">Data Lake</a> for cost-effective data storage as well as <a href="#">Atlas Search</a> for optimized full text search.</p>
Documentation & University	<p>Apache Cassandra offers <a href="#">documentation</a> on their main website, including a dedicated community.</p> <p>There are no official university or online courses on the Cassandra website.</p>	<p>Detailed <a href="#">documentation</a> with examples and full tutorials including a full <a href="#">community</a> and <a href="#">developer hub</a> websites.</p> <p>Online university with some free courses available at <a href="https://university.mongodb.com">https://university.mongodb.com</a>.</p>

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Native Data Visualization Tooling	There are no native data visualization tools provided by the Cassandra project.	<a href="#">MongoDB Charts</a> provides a quick, simple, and powerful way to perform data visualization with MongoDB Atlas data.