Couchbase Server 4.6: What's New

You asked for easier, simpler developer frameworks, well here they are! Couchbase Server 4.6 comes with a whole raft of developer-centric features that make building rich applications easier. Everything from new N1QL functions (especially around datetime manipulation), sub-document API enhancements, and data import/export tools to support for the latest advances in .NET, Spark, and Kafka make it simpler to build modern, high performance, flexible applications in less time.

In order to build highly responsive applications, query performance is key. As with every Couchbase product release, Couchbase Server 4.6 includes multiple performance enhancements in the N1QL query engine, resulting in lower latency queries and even faster response times for certain queries.

Couchbase Server also includes features that both DevOps and Enterprise Architects will love as well, including revolutionary Hybrid Logical Clock timestamps that make it simpler to deal with clock drift between different replicated Couchbase clusters, and security features like Pluggable Authentication Modules (PAM) and server secret management.

Query

Manipulating JSON date and time data, arrays, and nested objects inside of a query expression can be challenging. Most developers solve this problem by manipulating JSON in the middle tier or the client application layers. Wouldn't it be easier and faster if you could do that directly in the query language? The new string, date, array, and object functions that have been added to N1QL simplify data transformations and makes it easier to build rich query expressions. String functions, Date functions, Array functions, Object functions

30 years of RDBMS development have definitely taught us one thing, "Once you get past simple key-value operations, query performance is all about the efficiency and intelligence of the query planner, optimizer, and executor." Faster queries in N1QL in Couchbase Server 4.6 are the result of over 35 optimizations in the N1QL query engine across multiple types of operations. Faster queries mean lower response times and better customer experiences. N1QL enhancements

```
EXECUTE                    <  1/1  >     CLEAR HISTORY              SAVE QUERY

1   SELECT OBJECT_NAMES ('travel-sample' .schedule[0])
2       FROM 'travel-sample'
3       WHERE type = "route" LIMIT 1 ;
4
5   "results" : [
6       {
7        "$1":[
8              "day",
9              "flight",
10             "utc"
11        ]
12      }
13   ]
14
```
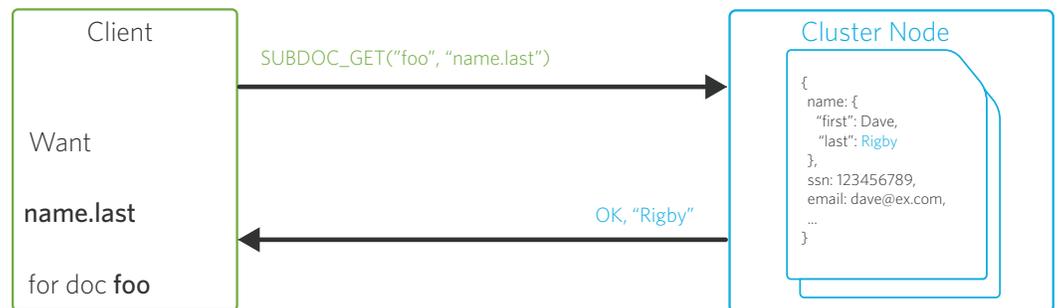
Data Access

Making APIs developer-friendly means bringing the development process into a context that is more familiar to the developer, and that more closely maps to what they are doing in the application. In Couchbase Server 4.6 we've added two important developer-centric features: additional data structure support and support for .NET Core.

Adding direct support for lists, maps, sets, and queues in the sub-document API using the new data structure SDK feature, further simplifies application development. The new data structures work seamlessly with the same underlying data representation, allowing developers in N1QL, Java, .NET, Node.js, and other languages to access the same data across different programming languages and interfaces. Data structures

.NET Core is the future of Microsoft application development for the cloud. It is much smaller, has fewer dependencies, and is much easier to deploy. Adding .NET Core support enables Microsoft application developers to easily develop and integrate their cloud-based applications with Couchbase Server. .NET Core blog

```
Client                    SUBDOC_GET("foo", "name.last")        Cluster Node

                                                                {
Want                                                              name: {
                                                                   "first": Dave,
                                                                   "last": Rigby
name.last                             OK, "Rigby"                 },
                                                                 ssn: 123456789,
                                                                 email: dave@ex.com,
for doc foo                                                      ...
                                                                }
```

Tools

One of the first things that developers want to do with Couchbase Server is move data in and out of the server easily. In Couchbase Server 4.6 we've made it easier than ever via new flexible import and export tools. The **cbimport** tools can import data from a CSV file or a JSON document, while **cbexport** can export data as a JSON document. Cbimport, Cbexport

```
cbexport [--version] [--help] <command> [<args>]
cbimport [--version] [--help] <command> [<args>]
```
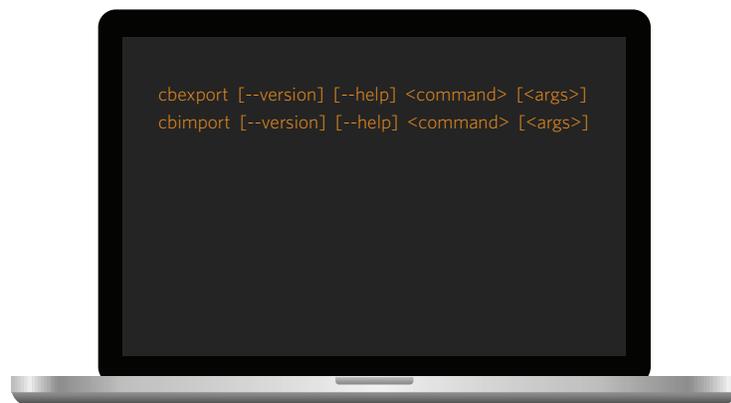
Replication

Active-active replication architectures like Couchbase can create very interesting conflict resolution scenarios. Depending on their data center deployments and application behavior, different enterprises need different strategies to manage conflict resolution. Couchbase Server 4.6 introduces cross datacenter replication (XDCR) with timestamp-based conflict resolution. This new feature makes it easier for applications to implement a Last Write Wins (LWW) document conflict management policy across multiple Couchbase clusters. The per-document timestamp combines the server logical and physical clocks together, forming a hybrid logical clock and timestamp, which enables easy identification of consistent document snapshots across distributed Couchbase clusters. Timestamp-based conflict resolution
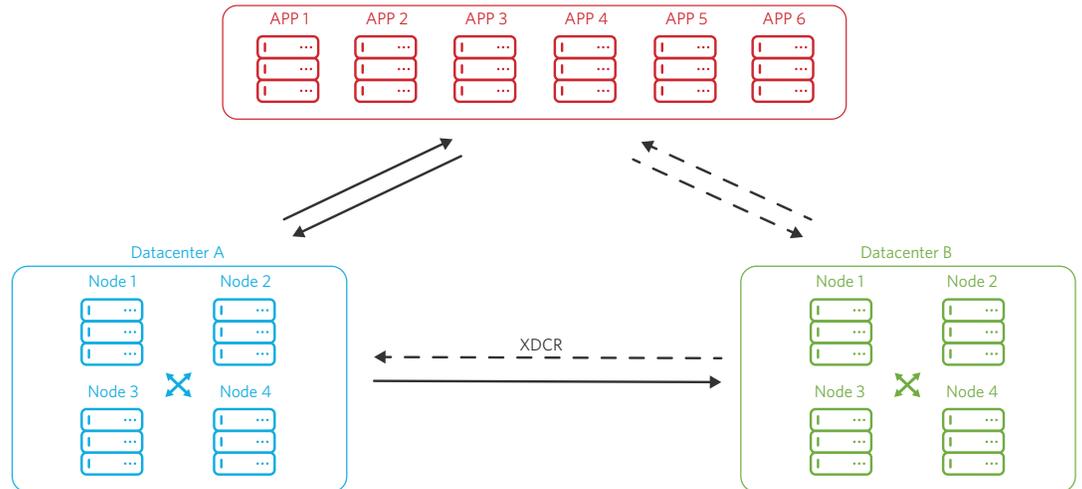

Security

We've all seen the very worrying real-world security issues raised in the past few months. Security and databases go hand in hand in order to provide scalable and secure enterprise data management. In Couchbase Server 4.6, as part of our regular cadence of security-related features, we've added Pluggable Authentication Modules (PAM) and improved secret management to the server.

PAM simplify centralized password and policy management across servers. It also enables use of existing password management services for a Couchbase cluster (for example, Linux/etc/shadow). Pluggable Authentication Modules

The new server secret management feature provides improved enterprise security compliance and a more security-hardened Couchbase Server. Secret management
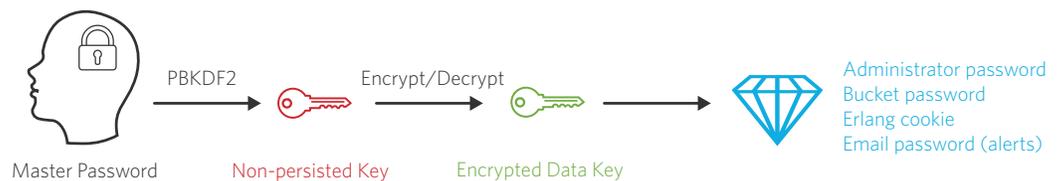
Full Text Search (Developer Preview)

We're continuing to enhance the Developer Preview for Full Text Search (FTS). With this release we've added significant performance enhancements, as well as new indexing and sorting options. FTS enhancements

Big Data Connectors for Spark and Kafka

Couchbase Server 4.6 is compatible with the updated releases for the Couchbase Spark Connector and Couchbase Kafka Connector. Couchbase Spark Connector 2.0 includes support for Spark 2.0 and the Structured Streaming API that enables continuous analysis of operational data. Couchbase Kafka Connector 3.1 makes it easier to build scalable and reliable streaming data services between Apache Kafka and Couchbase by leveraging Kafka Connect, which standardizes the management of the connector, enables end-to-end monitoring, and supports dashboard tools such as Confluent Control Center. Big Data connectors

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About Couchbase, Inc.

We're the company behind the Couchbase open source project, a vibrant community of developers and users of Couchbase document-oriented database technology. Our flagship product, Couchbase Server, is a packaged version of Couchbase technology that's available in Community and Enterprise Editions. We're known for our easy scalability, consistent high performance, 24x365 availability, and a flexible data model. Companies like AOL, Cisco, Concur, LinkedIn, Orbitz, Salesforce.com, Shuffle Master, ynga and hundreds of others around the world use Couchbase Server for their interactive web and mobile applications. www.couchbase.com