MongoDB Drives NoSQL More Deeply into Enterprise Opportunities   by, James Kobielus

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From the start, NoSQL databases such as MongoDB have been engineered to handle semi-structured and machine data more flexibly than relational databases, which traditionally required a rigid database design before ingesting data. As the most iconic vendor of NoSQL platforms, MongoDB has grown its business by pitching the ease, flexibility, performance, scalability, and versatility of the document model for data management. It has gained significant traction in enterprises around the world through core features that suit it for many uses:

- file-based storage with load balancing and data replication features over multiple machines;
- horizontal scaling through sharding;
- elastic scalability;
- flexible database schema;
- batch processing of data and aggregation operations;
- high availability with document-database replica sets;
- server-side JavaScript execution for queries, aggregation functions, and sending commands directly to the database for execution;
- support for ad hoc queries and user-defined JavaScript functions;
- indexing with primary and secondary indices;
- real-time, event-driven change data notifications;
- guaranteed cross-node read/write consistency;
- drivers for major programming languages and development environments, as well as many community-supported drivers for other programming languages and frameworks;
- graphical and command-line-interface front-ends for database administration, data viewing and manipulation, and data exploration; and
- connectors to popular business intelligence and data analytics development tools.

In addition to a well-engineered product, MongoDB has achieved sustained growth in the NoSQL segment by leveraging the following strategic advantages:

- ***Enterprise users frustrated with the limitations of relational technology***: The ease of migrating from the open-source distro to the enterprise edition has made it easier for users to not only adopt the document database but also to "lift and shift" workloads to MongoDB from legacy relational databases when they're ready.
- ***Flexible data deployment options***: Another longtime MongoDB advantage has been that it gives

customers the freedom to run its document database anywhere, from on-premises deployments in private clouds to platform-as-a-service offerings in the public cloud. In the last few years, it has made put the cloud at the forefront of its go-to-market strategy, with impressive results. The company's Atlas database-as-a-service offering is a runaway success, having shown greater than 400 percent year-over-year revenue growth in the past year.

- ***Strong cloud partnerships***: Mongo's principal public cloud partners–Amazon, Microsoft, and Google–all report that its document database is one of most popular services on their respective public clouds. This is doubly impressive, considering that all of them offer competing NoSQL database-as-a-service offerings (Amazon Aurora, Azure Cosmos DB, and Google Cloud Bigtable).
- ***Open-source business model***: MongoDB has benefited from an open-source business model under which users of the GNU licensed community version may convert to paying customers of the commercially licensed Enterprise Advanced edition to gain access to service and support. Its flagship database is available at no cost under the open-source GNU Affero General Public License as well as proprietary licenses. MongoDB Enterprise Advanced runs in the IBM and Rackspace clouds, and also comes with a commercial enterprise license for on-premises deployment, including the vendor's 24×7 support and DevOps tooling.

For all these reasons, it's getting harder to dismiss MongoDB as merely a niche data platform vendor. This is especially the case when you consider that it now boasts:

- Almost 7,000 customers in more than 100 countries;
- More than 80 percent year-over-year growth in the number of customers;
- More than 50 percent year-over-year revenue growth at the brand level;
- More than 40 million downloads for its core open-source database platform, with more than 12 million of those coming in the past 12 months;
- More than 850,000 registrations for its online MongoDB University service;
- More than 1,000 employees in 34 offices in over 20 countries; and
- More than 1,000 partners.

This week at its annual developer conference in New York, MongoDB accelerated its push into the enterprise database arena and scoped out further opportunities to deliver its offerings in public, private, and hybrid multi-cloud environments. Before more than 2,200 attendees, the company, which went public last year, made several key product announcements that make its flagship document database platform a more attractive migration target for enterprise relational database users:

- ***ACID transactions***: The vendor announced general availability of the 4.0 release of its flagship document database platform. Coming out of beta, MongoDB 4.0 supports multi-document guaranteed transactions with support for atomic, consistent, isolated, and durable (ACID) semantics. Through snapshot isolation, MongoDB 4.0 ensures a consistent view of data updates across multiple documents within replica sets in single clusters (today), as well as across documents stored in other, sharded clusters (in MongoDB 4.2, expected in 2019). This new version enforces all-or-nothing execution of transactions in order to maintain data integrity, while enabling rollback of uncommitted transactions across multiple documents and clusters. Multi-document ACID support opens MongoDB to a wider range of enterprise use cases, including online transactional processing, that have traditionally been supported by relational databases.
- ***Serverless functions***: The vendor announced MongoDB Stitch, its new serverless application development platform. This new environment supports rapid development of Web, mobile, and other applications as serverless functions that run on MongoDB's document database, whether those applications run on-premises, in public clouds, or in hybrid multiclouds. It provides an abstraction layer that accelerates developer productivity while giving developer access to MongoDB database functionality while ensuring robust security and privacy controls. Stitch includes three services that are now generally available. QueryAnywhere supports secure access to the MongoDB query

language, document model, and declarative rules engine. Functions supports execution of JavaScript for accessing microservices and other MongoDB server-side logic, as well as easy integration with external cloud services. And Triggers supports invocation of MongoDB functions automatically in response to creates, reads, updates, and other actions in the database, in applications, and in other services.

- ***Edge data synchronization***: The vendor announced MongoDB Mobile, a new mobile database that is now in beta and which gives MongoDB users access to the document database, all the way out to mobile devices such as iOS and Android devices and also on Internet of Things edge devices. MongoDB Mobile supports real-time, automatic synchronization between data held on devices and data persisted in the backend MongoDB database. MongoDB also announced the still-in-beta Stitch Mobile Sync, providing serverless functions for developers to programmatically access these new synchronization features on devices and the back-end MongoDB Mobile database.

- ***High-performance, compliant, low-cost cloud applications***: The vendor announced several enhancements and extension to its 2-year-old MongoDB Atlas platform-as-a-service offering. For low-latency performance on geographically distributed MongoDB applications, Atlas' new Global Clusters service enables creation of sophisticated policies for positioning, isolating, and managing data in MongoDB clusters throughout the world. Also, MongoDB has beefed up Atlas' database security features, now supporting encryption key management, LDAP integration, and database-level auditing, as well as the ability to use a secure Atlas environment to manage protected health information in compliance with the US Health Insurance Portability and Accountability Act. Furthermore, it announced that it is giving Atlas developers more choice by providing access to a fully managed MongoDB database on Google Cloud Platform at no cost of entry. Geared for application prototyping, this new Atlas GCP "free tier" offering provides 512 MB of free storage for MongoDB running on GCP.

- ***Distributed applications***: In addition to the new Global Clusters capability in Atlas, the vendor announced that it's providing database administrators with the ability to use Kubernetes to orchestrate distributed cluster deployments in MongoDB 4.0. The new Kubernetes Operator, which is now in beta and integrates with the vendor's Ops Manager, helps build and manage distributed MongoDB clusters running in private, public, and hybrid clouds. This new capability supplements Enterprise Server for Pivotal Cloud Foundry, which MongoDB launched earlier this year to provide consistent provisioning, configuration, security, and runtime management of MongoDB instances deployed across distributed clusters.

These new capabilities put MongoDB in a good position to continue growing its deal sizes and customer share-of-pocket as it seeks out larger enterprise accounts. However, none of these new features is particularly differentiated in today's big data platform wars, considering that ACID transactions, serverless interfaces, edge data synchronization, platform-as-a-service offerings, hybrid cloud deployment, and distributed cloud-native microservices are now found in most of the leading big data platform providers' solution portfolios.

What MongoDB has announced this week represent table stakes for it to compete in a market that's increasingly dominated by AWS, Microsoft, Google, IBM, and other diversified cloud data service providers. Enterprise IT professionals now have additional reasons to include MongoDB in their short list of solution providers to address a wide range of digital transformation and data platform modernization requirements.

To seize these opportunities, the vendor will need to ramp up its already impressive partnerships with systems integrators, value-added resellers, independent software vendors, and cloud providers, with partner-sourced bookings looming larger in MongoDB's go-to-market strategy.

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