NuoDB swiftly updates its distributed database to address both transactions and analytics

Analyst: Matt Aslett

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With the Swifts release of its distributed relational database, NuoDB is positioning to support analytic workloads for the first time, in addition to transactional, operational applications.

The 451 Take

We are seeing growing interest in databases that combine transactional and analytic capabilities to deliver operational intelligence, as well as emerging interest in distributed database architecture. With its latest release, NuoDB once again demonstrates that it is at the forefront of innovation being delivered with NewSQL relational databases by being able to tick both boxes. We also continue to see skepticism from mainstream database users about emerging alternatives to the incumbent hegemony, so signing more customers of the scale of Dassault Systèmes will be essential to NuoDB continuing its momentum and proving the doubters wrong.

Context

NuoDB emerged in 2010 with the rather ambitious aim of rethinking the relational database for distributed cloud computing architectures, enabling the relational model to evolve to support ACID-transactional applications in the public and private cloud. As is the case with most ambitious startups, what the company required to support its claims was a high-profile customer, and one duly arrived in February when Dassault Systèmes not only signed up as a customer but also invested in the company as part of a $14.2m series B funding round.

Dassault is one of more than two dozen paying customers NuoDB has landed for its eponymous database – it won't be more specific than that, but does claim approximately 400 deployments, including the free Community Edition version, and 15,000 evaluations in total (compared with 10,000 in November 2013). Dassault turned to NuoDB specifically to support its move toward a high-performance, multi-tenant cloud architecture and alongside other large customers is helping to shape the development of NuoDB itself.

The latest version, 2.1, introduces capabilities that are designed to enable NuoDB to support for the first time mixed operational and analytic workloads. Specifically, the company is positioning NuoDB v.2.1 to both support transactional operational workloads and enable users to gain real-time analytic insights on that operational data.

We have identified growing interest in this approach, which 451 Research calls operational intelligence, as database vendors and users look to take advantage of cheaper memory and high-performance processors to support analytics on operational data as a real-time complement to dedicated data-warehousing environments that support reporting and ad hoc analytics on historical data.

The latest version is also known as Swifts, keeping up NuoDB's adoption of bird-related imagery – the database's peer-to-peer architecture is designed to enable disparate database nodes to operate together, like a flock of birds, in an emergent fashion. The company believes this architecture is particularly well suited to supporting hybrid transactional and analytic environments as individual physical nodes within a single logical database can be used to support different use cases. In this way, individual peers can be configured to support specific workloads (for example, in-memory peers to support high-performance analytics) while the entire collection of nodes continues to appear to the application as a single database.

Support for operational intelligence is enabled by some key functional enhancements in NuoDB v.2.1, including improvements and extensions to its SQL indexing and the introduction of a cost-based SQL optimizer. The latest version also adds a parallelized database migration tool, an affinity-based load balancer, a new automation console with UI improvements, improved support for automation templates, and a REST API.

NuoDB now has approximately 50 employees, compared with almost 40 in November 2013, but is planning to grow to 60 by the end of the year. That growth is being funded by customer adoption as well as the company's funding, which now totals $28m and involves Morgenthaler Ventures, Hummer Winblad Venture Partners and Longworth Venture Partners, plus Dassault.

Competition

NuoDB is by no means alone is targeting operational intelligence workloads with the relational database model. MemSQL and VoltDB are two examples of database providers that are already targeting operational intelligence workloads that we would expect to be compared with NuoDB, while we would also expect potential customers to potentially evaluate the likes of TransLattice, GenieDB and Clustrix. SAP is also positioning its HANA database to support both operational and analytic workloads, while Splice Machine is heading in that direction with its Hadoop-based relational database (NuoDB can also run on and access data from the Hadoop Distributed File System).

While these are all NewSQL databases designed to support transactional relational applications, we believe there may be some instances – particularly those driven by a shift to distributed architecture – where NuoDB will be evaluated alongside non-relational NoSQL databases such as Apache Cassandra, supported by DataStax, and Basho's Riak. The database market is dominated by incumbents such as Oracle, Microsoft and IBM, which provide the largest competition for all of the emerging database providers.

SWOT Analysis

Strengths

NuoDB is leading the charge toward the adoption of distributed relational databases and is beginning to add the reference customers to support its ambitious claims.

Weaknesses

Given the dominance of established relational database providers, we continue to see skepticism about the ability to deliver an elastically scalable relational database.

Opportunities

We are noting emerging interest in both distributed database architecture and operational intelligence, so NuoDB's ability to tick both boxes should stand it in good stead.

Threats

The established database giants have a track record of borrowing the best ideas from emerging rivals and quashing any serious challenges to their dominance.