NuoDB, Morgenthaler Ventures Talk Disruption in Databases

Gregory T. Huang 3/5/13

The database startup that is closest to my office, if not my heart, has a compelling story. Roughly speaking, it's one of these "if it really works, it is a game changer" types of companies. Which is fairly common in the tech world—but not as common as, say, "even if it works, who cares?"

NuoDB, based in Cambridge, MA, released its first product in January. The software provides business customers with an "elastically scalable" system for cloud data management. Before your eyes glaze over from the technical description, here's what it's really about.

"Let's stop screwing around with incremental stuff," says Barry Morris, the company's CEO and co-founder. "Think about the 10-year horizon."

He's talking about the notion that the Internet could have 50 billion devices on it by then. Web and mobile users already demand levels of speed and responsiveness that were unheard of when most of today's databases were designed. With global usage of social media, e-commerce, and financial sites on the rise, the volume of queries and transactions that IT systems have to handle is becoming a serious challenge. (Facebook handles roughly 50 million transactions per second, which requires a huge investment in big-data infrastructure.)

NuoDB's answer is to completely redesign databases from the ground up. Its technology uses "emergent" principles: instead of storing data in rows, columns, or tables and having centralized control points, NuoDB's software employs smart "atoms" that communicate peer-to-peer to represent the data in a non-obvious way. To the outside world, the atoms behave collectively like a database—in particular, one that gets faster by adding more machines to the network, Morris says. A loose analogy would be the group intelligence shown by a flock of birds or a herd of migrating wildebeest.

And in the debate over SQL vs. NoSQL (and relational vs. non-relational) databases, NuoDB comes down on the side of SQL and relational—though its architecture under the hood is unconventional. It is intended to do everything an SQL database can do, but be more scalable on the Internet.

Perhaps biggest among NuoDB's claims is that its software can handle high volumes of both transactions (user clicks) and business-intelligence queries (analytics). With most databases, you can do one but not the other—traditional SQL systems, for example, are maligned for not being able to handle millions of user clicks.

But what are the prospects of a novel design in an industry so deeply entrenched in old IT infrastructure? And how well is it actually working so far?

To get some answers, I sat down with Morris and Gary Morgenthaler, the partner at Menlo Park, CA-based Morgenthaler Ventures who invested in NuoDB. (The 25-person company has raised $20 million, and its other investors include Hummer Winblad Venture Partners and Longworth Venture Partners.) Although a startup and its VC can be a deadly pairing when it comes to interviews—too much fluff and puff—these guys were pretty frank (and optimistic) about their challenges.

And Morgenthaler knows databases. Back in the ‘80s, he co-founded and served as CEO of Ingres, a relational-database software company. He went on to become CEO of Illustra Information Technologies, a database management software firm, and has served as a director of Siri, BlueArc, Catena Networks, and Nuance Communications.

He has seen a lot of things, but NuoDB gets him excited because its timing is good, among other things. (You can tell he’s a seasoned VC—he’s as attuned to the market conditions as he is the technology.) “Historically the time to build a big company in an existing market is at a time of transition,” Morgenthaler says. That means mainframe to minicomputer, the PC revolution, PC to Internet, and (now) the expansion of the Internet and mobile devices.

For big established players like IBM, Microsoft, SAP, and Oracle, “it will be interesting to see if they can maintain hegemony in the $35 billion relational database market,” Morgenthaler says. “It remains to be seen whether their architectures can do that” where the Internet is headed. “Long term,” he says, “this is a fundamental new architecture that places a challenge on the incumbents.”

I asked him if NuoDB would be the biggest database company to come out of Boston, out of the dozens in contention. “It certainly has that potential,” he says. (NuoDB is currently the only Boston-area company in Morgenthaler’s portfolio.)

So where are the proof points? The company has signed up customers including AutoZone and NorthPoint. At the time of its product launch, it had about 3,500 beta customers and validation from outside analysts. Basically, it sounds like NuoDB’s database software does what it’s supposed to do in terms of reliability, scalability, security, and speed—over 1 million transactions per second on $50,000 of commodity hardware over standard Ethernet. That’s an achievement, given its underlying novelty.

Whether many organizations and corporate customers will adopt it is another question. The key issues are cost and ease of use—but if it’s cheaper than Oracle and works better, why not? “This company has to cross the chasm in multiple markets,” Morgenthaler says, including finance, government, and other big industries.

To that end, NuoDB has a streamlined sales process, whereby companies and IT departments can download the software in a few clicks, try it out over a weekend, and be on their way. “There’s no eight-month procurement cycle,” Morgenthaler says. “That can accelerate the adoption in ways that aren’t expected and aren’t traditional.”

That’s enterprise IT sales in the new age of the Web—and there will be plenty of competition, to be sure. (See cross-town rival ParElastic, for starters.) My guess is that adoption will take a while, and that perhaps the true impact of NuoDB’s technology won’t be apparent for several years.

In the meantime, it will be fascinating to watch the startup try to build a business around a new kind of database. “We’re not here to build a small company with $10-15 million in revenue,” Morris says. “This is about setting up a whole new wave of data management. It’s about adoption and getting out there as the next-generation winner.”