Trinity College Dublin
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Research Seminar

# NuoDB, a peer to peer distributed database for the cloud

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**Abstract**
Traditionally, relational databases were designed for scale-up architectures. Supporting more clients or higher throughput required an upgrade to a larger server. Historically the alternatives for scale-out database management have been severely compromised, offering an unattractive choice between:

a) Sacrificing transactional (ACID) guarantees (eg "NoSQL" approaches),
b) Adopting tightly coupled models with significant flexibility and performance constraints (eg Shared disk or two-phase commit), or
c) Application-specific data management (eg sharding).

In the NewSQL model and in modern distributed datacenters, on-demand scale-out databases that maintain ACID semantics are an architectural requirement. Also critical are key features associated with being cloud-scale like ease of provisioning and management, security, agility in the face of unpredictable workloads or failures and support for widely distributed applications. Widely distributed applications, in turn, require distributed services that are highly available and can provide low latency. These are the design goals that defined the NuoDB architecture.

NuoDB is a distributed database designed with global application deployment challenges in mind. It's a true SQL service: all the properties of ACID transactions, standard SQL language support and relational logic. It's also designed from the start as a distributed system that scales the way a cloud service has to scale providing high availability and resiliency with no single points of failure. Different from traditional shared-disk or shared-nothing architectures, NuoDB presents a new kind of peer-to-peer, on-demand independence that yields high availability, low-latency and a deployment model that is easy to manage.

**Bio**:
Barry is an accomplished software CEO with over 25 years of industry experience in the USA and Europe, running private and public companies ranging in scale from early startup phase to 1,000+ employees. He loves to build companies around industry-changing paradigm-shifts in technology.

He is a sought after industry expert and has been quoted in business and technology publications including The Wall Street Journal, Forbes, Fortune, TechCrunch, Inc., Entrepreneur and InformationWeek. He has also been a featured speaker at business and technology events such as the MIT Sloan Symposium, NoSQL Now, Gigaom Structure, the NoSQL Search Roadshow and the Global Big Data Conference.

As co-founder and CEO of NuoDB, the leader in scale-out SQL database technology, Barry guides a company that has re-defined relational database technology to tackle the multiple challenges associated with cloud computing and the rise of global application deployments.

Prior to NuoDB, Barry joined IONA Technologies (NASDAQ:IONA) in the very early days and ultimately as CEO led Ireland's most successful software company through its strongest period of growth. He built the company to over 10,000 customers, over 270 technology partners, over $180m in revenues and over 70% market share. IONA Orbix became the most widely deployed strategic middleware product in the world. Under Barry's leadership IONA introduced the industry's first middleware microkernel now incorporated in the popular open source JBoss Fuse product. IONA laid the groundwork for modern SOA-based systems, and was influential in the rapid growth of the Irish technology industry during the Celtic Tiger era.

As Chairman and CEO of StreamBase Systems (acquired by TIBCO Software) Barry took an MIT project led by Dr. Michael Stonebraker and built it into the market pioneer and leader in Complex Event Processing (CEP). StreamBase uses advanced database technologies to correlate, analyze and respond to hundreds-of thousands of events per second. StreamBase is widely used today in financial services, ecommerce, multi-user online games, and intelligence applications. As connected devices, RFID, sensor networks and real-time systems continue their explosive growth, CEP is set to become a pervasive part of computing everywhere.

Barry's early career included technical, management and business development roles in London-based companies PROTEK and Metrica, and Lotus Development and DEC in Ireland. In addition to great deal of consulting work over the years he has served on the boards of many startup companies in Boston, Ireland and South Africa, as well as on the board of the International School of Boston, the Sugan Theater Company and the Boston advisory board of GOAL, the well-known Irish NGO.

Barry was born in South Africa and has lived for extended periods in England, Ireland and Massachusetts. He has a Degree in Engineering from New College Oxford University, and an Honorary Doctorate in Business Administration (DBA) from the IMCA.