SCIENTEL®

THE VOICE OF BIG DATA

Big data is big business and will affect organisations of all types. Unconventional data handling methodologies employed by truly Polymorphic DB solutions such as the Gensonix® NoSQL DB is crucial for effective big data solutions

Today the influx of data is exploding while budgets are shrinking. The normal business enterprise generates more data in one day than they used to in a decade. Organisations find it tough to comprehend data arriving at high volume, velocity, variety, and variability. The only constant is the doubling of corporate data, at least once in two years. This is the realm of big data. The big data industry is projected to reach $1tn by 2020 and reports show that big data contributed $156bn to the US economy last year. True big data levels are beyond the scope of today's ordinary machines and SQL based RDBMS (Relational Database Management Systems). This leaves enterprises questioning the cost effectiveness and reliability of traditional methodologies, which are heavily dependent on SQL. Thus, the primary DB technology that has emerged to deal effectively with big data is "Not SQL" (or "Not-only-SQL" or "New SQL"), aka NoSQL.

Scientel Information Technology, Inc., is a leader in NoSQL DB technology and related applications. Scientel, under the leadership of CEO Norman Kutemperor (who has been called "the father of NoSQL"), began its journey in database management as early as 1978. Even though leading RDBMS versions became de facto industry standards in the 1980s, Scientel R&D personnel – with extraordinary vision – realised something like big data would eventually come along in the upcoming internet era.

Around 1989, having identified big data-level vulnerabilities with SQL DBs, Scientel was able to accurately predict failure of SQL in big data environments. Though big data was still in its infancy, Scientel proceeded with unfailing commitment to Non-SQL DBMS research and released the Gensonix® NoSQL DB/NSQL©® in 1993. The product included distinct procedural NoSQL capabilities for structured as well as unstructured data which were truly visionary and industry challenging in nature. In the 2000's major SQL-related failures did occur at various internet giants that faced initial big data who *all* resorted to various types of NoSQL. Thus, the NoSQL industry was born in 2010.

Preparing for big data before it even existed

Many enterprises still fail to recognise all the various ways structured and unstructured information floods into their IT systems which are not managed optimally. In today's big data world, small percentages of data can spell the difference between business success and failure. Inefficiencies in handling data in the "same old SQL way" affects bottom-line by enabling competitors to pull ahead. From emails, texts, images, videos, to web logs, blogs, social media, MS documents, acquired data and PDF documents, the list is endless. Despite some organisations recognising these sources, they are stuck in a "SQL status quo" with no idea how to proceed in deciphering and using the different big data forms effectively. This is due to a lack of priority, expertise, outdated infrastructures, and sluggish tools which hamper collection, organisation, reduction, storage, and timely retrieval.

Scientel, in addition to generating a host of pre-2000 era general business solutions, took its first steps in the current generation of big data solutions in 2001, when e-commerce was beginning to make strides. It released the DBIS® e-com for ecommerce, which was developed to handle real-time inventory/transactions with the differentiator being its ACID capabilities. According to Mr Kutemperor: "The DBIS e-com provided structured inventory/transaction management along with unstructured electronic catalog data management seamlessly in a single DB. This solution, which would otherwise be built on an SQL type platform in a structured environment, incorporated the core principles upon which Scientel's overall designs are based: i.e., efficiency and cost-effectiveness in managing structured *and* unstructured data within a *single* NoSQL DB. We subsequently released the DBIS Supply Chain Management system in 2003." The DBIS Intranet provides an interactive, web-like supply chain management system designed to run on the client's intranet. The enterprise version of Gensonix NoSQL DB was formed as a platform to support distinctly different data models for unstructured as well as structured big data. Many other NoSQL as well as SQL DBs even today are based on a single data model for all types of data or one that is mixed in a desperate fashion.

The ideal big data DB: Gensonix Polymorphic SUPER DB

Scientel's Gensonix NoSQL DB –a "polymorphic" DB – stores structured/unstructured data in relational, network, column and document formats, and is ideal for all environments and applications. Its massive scalability and ability for variety of data is uniquely suited to big data environments. Polymorphism is the ability of an entity to behave like more than one of its counterparts given a set of circumstances or criteria. In other words, in a polymorphic DB, you can use a relational approach when that is appropriate, hierarchical when that is, and so on. No one paradigm is fully implemented, but the DB uses enough of the features/capabilities needed to provide a reasonable solution to a problem. Gensonix identifies and incorporates the 7 main/key features of an ideal big data DB: multi-modeling, document stores, NSQL language, SQL queries, transaction tables with OLTP, MPP on HPC and Never-Slow technology – all in a single DB! This qualifies Gensonix as truly a polymorphic SUPER DB which allows it to behave like another DB.

The NSQL language is native to low level languages such as C, C++, etc and supports many intrinsic functions; and performs easy recursive database/computing operations. Supporting multi-dimensional array processing, Gensonix is capable of very efficient analysis of vast amounts of structured and unstructured data at ultrahigh speeds. While NSQL is simple in nature, it handles complex big data tasks with ease. Gensonix also runs on runs on Large Data Warehouse Appliance

Norman Kutemperor, CEO, Scientel Information Technology, Inc.

(LDWA) configurations and scales to large numbers of multiprocessor nodes. Case studies have demonstrated how Gensonix can tackle complex problems that are difficult or nearly impossible with certain other databases and Gensonix fully processes trillion-record level tables for billion-record level entities without employing table joins. "We are talking about processing multi-petabytes of data in real-time", says Mr. Kutemperor. Scientel's Gensonix-based ECMS (Enterprise Content Management & Search System) incorporating Never-Slow technology is a first of its kind data management tool that can perform comprehensive, enterprise-wide, cost-effective, management of *all* unstructured data. Scientel mini data warehouse solution series – The MDWA system reaches two million transactions per minute on a single node, with speeds much higher on advanced LDWA equipment.

Scientel platform/product capabilities

The Gensonix NoSQL DB suite is the flagship platform of the organisation that provides a Highly Scalable Server Environment capable of handling big data requirements of any size. Scientel's HPC (High Performance Computing) based LDWA systems support true MPP. MPP (Massively parallel processing) is a method in which proportional components of a Database are processed in parallel – that is, essentially simultaneously, by a large number of equal (peer) nodes in the same system. This method does not apply to DB systems where the DB components are only stored/managed by nodes that are not peers but slaves and hence not identically and fully processed by them. Designed for high volume and velocity, this concept works well on systems that scale out (NoSQL) rather than scale up (SQL). Perhaps one of the major differentiating factors of Scientel's products could be the ability to scale out massively, to LDWA system levels. For example, Scientel's base-level LDWA2200 product/hardware platform has been integrated with over 172 CPU cores, which easily exceeds the size of a mainframe.

Global ROI Potentials for NoSQL

Leveraging its staunch inclination towards innovating in data sciences and with management's vast IT expertise, Scientel is looking forward to global opportunities of partnership and expansions. Scientel will provide solutions on a global basis to show how effective NoSQL DB technologies can be in solving big data problems that will determine the success or failure of large global enterprises.

While established offices in the USA, Europe and Asia lend much needed reach, Mr Kutemperor plans to take its capabilities to the next level in Europe and Asia. Specifically these plans include additional development capabilities in India and Eastern Europe along with major European and Asian sales and data centres.

Big data is here to stay and when coupled with Scientel's three decades of expertise in big data kinds of development expertise, its offerings are a true force to reckon with in the data science and analytics market today. Judging by its veteran standards and a never fading commitment to embrace the new, Scientel plans to continue to change the game in big data by leveraging its unique DB capabilities and throw a few surprises to the big guns in the industry along the way.

Further information

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