Magic Quadrant for Operational Database Management Systems

12 October 2015 | ID:G00271405

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Summary

As the operational DBMS market enjoys a dynamic resurgence, new entrants are challenging established leaders. Information managers will be especially interested in the changes in the Leaders quadrant, the strength of dbPaaS vendors, and the emerging feature parity of new and old vendors.

Strategic Planning Assumptions

By 2017, all leading operational DBMSs will offer multiple data models, relational and NoSQL, in a single DBMS platform.

Through 2018, a wave of consolidation will affect the operational DBMS market's smaller vendors, through mergers, acquisitions and business failures.

By 2017, the "NoSQL" label will cease to distinguish DBMSs, which will result in it falling out of use.

Market Definition/Description

The operational database management system (DBMS) market is concerned with relational and nonrelational database management products suitable for a broad range of enterprise-level transactional applications. These include purchased business applications, such as those for ERP, CRM, catalog management and security event management, and custom transactional systems built by organizations' own development teams. Also included in Gartner's definition of this market are DBMS products that support interactions and observations as new types of transaction.

Gartner defines a DBMS as a complete software system used to define, create, manage, update and query a database. A database is an organized collection of data that may be in multiple formats and may be stored in some form of storage medium (which may include hard-disk drives, flash memory, solid-state drives and/or DRAM). Additionally, according to Gartner's definition, DBMSs provide interfaces to independent programs and tools that both support, and govern the performance of, a variety of concurrent workload types. There is no presupposition that DBMSs must support the relational model or that they must support the full set of possible data types in use today. Furthermore, we do not stipulate that the DBMS must be a closed-source product; we include commercially supported open-source DBMS products in this market. Operational DBMSs must, however, include functionality to support backup and recovery, and have some form of transaction durability — although the atomicity, consistency, isolation and durability (ACID) model is not a requirement.

For this Magic Quadrant, we define operational DBMSs as systems that also support multiple structures and data types, such as XML, text, JavaScript Object Notation (JSON), audio, image and video content. They must include mechanisms to isolate workload resources and control various parameters of end-user access within managed instances of the data. For a definition of an operational DBMS workload, see Note 1.

Operational DBMSs may support multiple delivery models, such as stand-alone DBMS software, certified configurations, cloud (public and private) images or versions, and database appliances (defined in Note 2). These are discussed and evaluated together in the analysis of each vendor.

For the purposes of this Magic Quadrant, we treat all of a vendor's products as a set. If a vendor markets more than one DBMS product that can be used as an operational DBMS, we describe each product in the section specific to that vendor, but we evaluate all of that vendor's products together as a single entity. Strengths and Cautions relating to a specific offering or offerings are also noted in the individual vendor sections. It may be important for organizations to evaluate different offerings from the same vendor separately as the portfolio of choices becomes broader, and as purchasers more frequently pursue best-fit engineering strategies.

For details of the survey of vendors' reference customers that we conducted as part of the Magic Quadrant research process, see Note 3.

For details of Gartner's client inquiry service data, which we use extensively in this report, see Note 4.

For information about venture capital investments in the operational DBMS vendors discussed in this Magic Quadrant, we consulted CrunchBase (https://www.crunchbase.com/) .

Magic Quadrant

Figure 1. Magic Quadrant for Operational Database Management Systems

Source: Gartner (October 2015)

Vendor Strengths and Cautions

Actian

Headquartered in Redwood City, California, U.S., Actian (http://www.actian.com/) offers a relational DBMS (RDBMS) (Ingres) and embedded (PSQL) engines suitable for operational use. Actian's preferred business model is based on selling subscriptions, from which 90% of its RDBMS revenue came in 2014; it claims 4% growth in Ingres revenue in 2014.

STRENGTHS

Customer base: Actian claims that a large percentage of its revenue is subscription-based. Two-thirds of its customers are on the latest two releases. Ingres has broad geographic and industry coverage, and nearly half its revenue comes from independent software vendors (ISVs).

Solid feature set: Ingres version 10.2, released in 2014, has expanded geospatial and security features. Actian is focusing its R&D efforts on database platform as a service (dbPaaS) initiatives, and supports cloud backup and disaster recovery.

Embeddable offering: Actian's PSQL gives it a means of entering the small-footprint, minimal-administration market that is so important to mobile and Internet of Things applications.

CAUTIONS

Lack of operational focus: Actian's positioning efforts remain focused on analytics, not operational use cases. Actian recently created a stand-alone division focused on its data management and integration products.

Performance challenges: Surveyed reference customers gave Actian very low scores for performance, and reported among the smallest sizes of DBMS for high-translation-rate databases.

Market indifference: Over the past 12 months, Gartner has received few inquiries about Actian's operational DBMSs. Despite Actian's claim of a high rate of renewal, fewer than half its surveyed reference customers expect to buy additional licenses from it in the coming year. Respondents gave Actian very low scores for ease of doing business.

Aerospike

Headquartered in Mountain View, California, U.S., and founded in 2009, Aerospike (http://www.aerospike.com/) markets a hybrid in-memory/flash NoSQL DBMS — a real-time data platform — for the operational DBMS market. It is available both as an open-source community version and an Enterprise Edition.

STRENGTHS

Transactional performance: Aerospike's offering makes hybrid use of DRAM and flash as addressable memory. This unique approach enables very-high-speed transactions.

Customer focus: Aerospike received very high scores for professional services, ease of operation and value for money. Its focus on transactional use cases continues to resonate with its target customers, although there is a very low rate of reported hybrid transactional/analytical processing (HTAP) use.

Scalability: Survey respondents scored Aerospike near the top in terms of supported transaction volumes.

CAUTIONS

Aging positioning: Aerospike's in-memory DBMS is no longer a competitive advantage as most vendors offer in-memory DBMSs. Aerospike has little to offer for new use cases and data types.

Management turnover: Management turnover has slowed Aerospike's planning efforts and lost it momentum due to an associated revision of focus and the deferment of marketing investment.

Technical direction: Aerospike still lacks some basic SQL and NoSQL functions, and has provided little guidance about its technology roadmap.

Altibase

Headquartered in Seoul, South Korea and Fort Lee, New Jersey, U.S., Altibase (http://altibase.com/) offers Altibase HDB, an SQL operational DBMS capable of using in-memory, solid-state disk, traditional disk and hybrid storage. Altibase also offers the Altibase XDB, an in-memory-only DBMS. Its products are available on-premises, on a virtualized basis and through cloud providers.

STRENGTHS

Performance: Reference customers gave Altibase largely above-average marks for the overall performance of its operational DBMS. They particularly highlighted its performance for high-speed ingestion.

Expanding geographical presence: The company is expanding beyond its Asia/Pacific stronghold through aggressive growth of its partnership network in Canada, Europe and North America to address the telecom, financial services and manufacturing industries.

Simplified pricing: Altibase avoids license complexity by including all features, such as high-availability/disaster recovery (HA/DR) replication, in its core license. Reference customers gave Altibase very high scores for pricing suitability.

CAUTIONS

Customer experience: Altibase's customer reference customer scores were generally above-average, but its scores in most customer experience categories were lower than last year's. This is probably because it is a rapidly growing company with a fast-increasing customer base.

Lack of market-expanding vision: Altibase's hybrid (memory and disk) vision is now commonplace in the DBMS market. It has not innovated in terms of multimodel capabilities and risks being overtaken by more aggressive vendors if it cannot execute its development roadmap.

Lack of market presence: Survey respondents identified a lack of reference customers as their main reason for not selecting Altibase. Additionally, Gartner clients do not often mention Altibase during their inquiry calls.

Amazon Web Services

Amazon Web Services (http://aws.amazon.com/) (AWS) is a wholly owned subsidiary of Amazon.com, headquartered in Seattle, Washington, U.S. AWS offers the Amazon Relational Database Service (RDS, for Aurora, Microsoft SQL Server, MySQL, Oracle and PostgreSQL) and Amazon DynamoDB (a NoSQL document and key-value DBMS).

STRENGTHS

Diverse product capabilities: AWS provides a wide range of product capabilities, spanning relational and NoSQL technologies. It continues to release new products to meet or exceed the market's demands.

Geographic availability: Based on Amazon Elastic Compute Cloud (EC2) and Amazon Simple Storage Service (S3), AWS supports 30 availability zones spanning 19 countries and five continents. While all services are not available in all zones, AWS's cloud infrastructure is one of the largest, most diverse and stable.

Ease of doing business: AWS scored high in the survey of reference customers for ease of doing business. Three-quarters of them plan to purchase additional services from AWS within the next 12 months.

CAUTIONS

Limited on-premises capabilities: AWS's focus on cloud-based services has naturally limited its product capabilities for hybrid cloud deployments of DBMSs. Although AWS does provide tools and services aimed at supporting hybrid deployments, customers will need to evaluate their on-premises implementation requirements carefully to ensure that AWS's hybrid solutions will interoperate with their existing or planned assets.

Documentation and professional services: Reference customers scored AWS below average for support, documentation and professional services. This could become a significant issue as AWS gains more new customers.

Performance: AWS scored below average for performance in the customer reference survey, although this may be partly attributable to customers' understanding of cloud environments and how best to use them.

Basho Technologies

Headquartered in Bellevue, Washington, U.S., Basho Technologies (http://basho.com/) offers Riak KV, a distributed, masterless key-value store, and Riak S2, a multitenant cloud object store compatible with AWS S3. Both are available in open-source and commercial enterprise versions. In 2015, Basho introduced the Basho Data Platform, comprising Riak KV, Riak S2, core services for replication, cluster management and add-ons for integration with Apache Spark, Apache Solr and Redis.

STRENGTHS

Resilience and operational simplicity: Riak KV and Riak S2 provide multi-data-center distribution and replication with automated balancing; they do not fail upon server failure or network partition. In addition, operational simplicity was also frequently identified as a strength in the survey of reference customers.

Rich features: The Basho Data Platform adds packaged structure and management capabilities to the already-rich functionality offered by Riak KV and Riak S2. This positions it well for hybrid cloud deployments and emerging trends like the Internet of Things (IoT), while also providing integration with new technologies like Apache Spark.

Growing base of loyal, paying customers: Basho now has over 200 enterprise customers, with significant growth both outside and inside its established base, and an increasingly strong financial performance. A strong community also contributes to the open-source version of the product.

CAUTIONS

Growing competition: The market for NoSQL databases is crowded, with both new entrants and major vendors (AWS, IBM, Microsoft and Oracle) adding core NoSQL functionality to their portfolios. This is reducing Basho's differentiation.

Market presence: The survey of reference customers found that Basho was evaluated less than 3% of the time as a candidate for operational DBMS use cases. This indicates limited awareness of Basho in the market.

Ease of programming and pricing: Reference customers scored Basho among the lowest for ease of programming, which indicates challenges in initial implementations of its technology. Basho also received low scores from reference customers for the suitability of its pricing

model.

Cloudera

Headquartered in Palo Alto, California, U.S., Cloudera (http://www.cloudera.com/) offers Cloudera Enterprise, a commercial version of Apache Hadoop for which Apache HBase provides the operational DBMS capabilities. Cloudera Enterprise is available both on-premises and through various cloud providers.

STRENGTHS

Financial stability: Cloudera has raised over $1 billion in venture funding, and we estimate that it has the highest 2014 revenue of the HBase providers in this Magic Quadrant. It has also developed a large partner ecosystem.

Performance, scalability and reliability: Cloudera's reference customers reported relatively few issues with software bugs and reliability, and there were no reports of inadequate performance or scalability.

Customer satisfaction: Cloudera's reference customers scored it higher than average in terms of their ease of doing business. Most indicated an intention to purchase additional licenses, products or features from Cloudera in the next 12 months.

CAUTIONS

Focus: The operational DBMS is only one component of Cloudera Enterprise. It may, therefore, have to compete for development and support resources with the rest of the product suite.

Operational outages: Reference customers' reports indicate that, of the vendors in this Magic Quadrant, Cloudera had the second-highest number of major outage days in a year.

Migration challenges: A relatively high percentage of Cloudera's reference customers considered their migration process across versions to be somewhat complex.

Clustrix

Headquartered in San Francisco, California, U.S., Clustrix (http://www.clustrix.com/) offers a low-administration, shared-nothing, distributed RDBMS, ClustrixDB, with replication and autoscaling. It is available as on-premises software and in the cloud.

STRENGTHS

Performance and scalability: Clustrix provides extreme scale-out clustering for performance and availability, particularly for cloud deployment models. Reference customers repeatedly highlighted Clustrix's scalability features as a core product strength.

Customer and service focus: Reference customers gave Clustrix scores well above the average in most customer experience areas. None of its customer experience scores were below average.

Expanding cloud integration: Some reference customers identified a need for tighter integration with infrastructure as a service (IaaS) providers, which Clustrix is working on as part of its strategic roadmap.

CAUTIONS

Breadth of innovation: ClustrixDB does not offer emerging data types, such as JSON or graph, which are becoming commonplace. And although the product does not necessarily need in-memory features for performance, Clustrix will find it harder to position itself as a market innovator without a better articulated in-memory proposition.

Growing competition: The market for distributed DBMSs offering SQL capabilities is increasingly crowded. Clustrix will need to improve its marketing execution to attract attention in competition with many other vendors.

Lack of visibility: Despite supporting several high-profile customers and use cases, Clustrix is largely unknown outside its e-commerce base. Clustrix's capabilities for IoT use cases should enable it to increase its visibility, however.

Couchbase

Headquartered in Mountain View, California, U.S., Couchbase (http://www.couchbase.com/) offers Couchbase Server, an open-source, distributed multimodel (document and key value) NoSQL DBMS. It is offered in Community, Enterprise and Lite Editions for on-premises, mobile or cloud deployment.

STRENGTHS

Aggressive capability expansion: Couchbase has added SQL capabilities to simplify operations and expand addressable use cases. Its multidimensional scaling capabilities support tuning clusters for specific workloads where Web scale is required.

Marketing effectiveness: Couchbase is increasing its visibility in the overall DBMS market. Users of Gartner's client inquiry service show increased awareness of Couchbase.

Performance and scalability: Reference customers scored Couchbase above the average for performance and scalability and particularly for cross-data-center replication use cases.

CAUTIONS

Usage difficulties: Reference customers gave Couchbase low scores for support and documentation. They also gave it below-average scores for ease of implementation and programming. These issues are particularly acute as most reference customers have been in production with Couchbase for less than two years.

Proof-of-concept performance: Overall, 59% of reference survey respondents did not select Couchbase due to the poor performance of its DBMS during a proof of concept.

Small community: Despite rapidly growing attendance at its events and conferences, and increasing traction for its mobile offering, Couchbase has yet to develop the same brand cachet with the developer community as its DBMS contemporaries.

DataStax

Headquartered in Santa Clara, California, U.S., DataStax (http://www.datastax.com/) provides DataStax Enterprise, a commercial version of the open-source Apache Cassandra database. The product is downloadable for on-premises operation, as well as through multiple cloud providers.

STRENGTHS

Customer satisfaction: DataStax's reference customers gave DataStax Enterprise nearly top marks for its automated data distribution and high-speed ingestion capabilities. Almost three-quarters (72%) of them plan to expand their engagement with DataStax during the next 12

months.

Emerging enterprise standard: Nearly half of DataStax's reference customers stated that DataStax Enterprise is a standard operational DBMS in their enterprise. This reflects DataStax's applicability for modern data management challenges.

Expanding global distribution: DataStax has expanded its community and corporate global operations. Partnerships with Microsoft (Azure) and HP help expand its global reach.

CAUTIONS

Documentation and support: Several reference customers reported difficulties with the accuracy and availability of DataStax's documentation. Some were also dissatisfied with the level of expertise available through its enterprise support service.

Skills challenges: Almost one-third (30%) of the respondents who evaluated DataStax did not select it due to concerns about the availability of skills. DataStax is addressing this issue with online training and partnerships.

Increasing competition: DataStax faces significant competition from AWS's DynamoDB and Google Cloud Datastore. Both offer similar data models in a managed footprint. DataStax also competes against its own open-source foundation, Apache Cassandra.

EnterpriseDB

Headquartered in Boston, Massachusetts, U.S., EnterpriseDB (http://www.enterprisedb.com/) supports and markets the PostgreSQL open-source DBMS, packaged as an open-source community edition and as Postgres Plus Advanced Server.

STRENGTHS

Community leadership: EnterpriseDB is the primary contributor to the Postgres community, and responsible for recent features such as JSON support, materialized views and partitioning. Increasing numbers of users of Gartner's of inquiry service recognize the EnterpriseDB brand.

Functionality and compatibility: Gartner clients report that EnterpriseDB's Postgres Plus Oracle compatibility feature is more than sufficient to run both mission-critical and non-mission-critical applications.

Stability: Reference customers rated EnterpriseDB highly for the stability of its DBMS, and were satisfied with its HA/DR features.

CAUTIONS

Performance: EnterpriseDB users gave it moderate to low scores for performance and low scores for ease of operation. This possibly reflects the greater demands of the increasingly complex workloads that EnterpriseDB is picking up in new use cases involving migrations from other vendors.

Customer focus: Respondents rated EnterpriseDB very low for professional services and ease of doing business, which are key attributes for its targeted mainstream customers.

Pricing expectations: Perhaps because of its association with an open-source community, EnterpriseDB needs to manage economic expectations carefully. Surveyed customers rated it low for value for money and the suitability of its pricing method. EnterpriseDB recently moved to processor-core-based pricing to address this issue.

FairCom

FairCom (http://www.faircom.com/ace/index_t.php) , which was founded in 1979, is headquartered in Columbia, Missouri, U.S., and privately owned. FairCom c-treeACE (Advanced Core Engine), one of the oldest NoSQL DBMSs, is a fully ACID, key-value store with both NoSQL (Indexed Sequential Access Method [ISAM]) interfaces and SQL. It supports transactions with an embedded or stand-alone engine.

STRENGTHS

Strong technology: c-treeACE has a long history of stability and innovation with cross-platform support (Unix, Linux, OS X and Windows). Scalability and strong HA stand out among its capabilities.

Customer base: FairCom's customer base encompasses both stand-alone and embedded implementations. The strength and loyalty of its customers provides revenue for R&D and steady, if slow, growth of its organization.

Very satisfied customers: For the second year in a row, FairCom received some of the highest overall scores in our survey, with high marks for customer support, professional services, performance, ease of doing business, ease of operations and HA. Furthermore, almost 70% of its reference customers reported no problems, and 70% said they would purchase more from it.

CAUTIONS

Competition: The most significant challenge to a vendor of FairCom's relatively small size is to keep growing and competing for new customers against increased competition from new startups in the NoSQL space and the additional functionality available from traditionally strong vendors.

Marketing presence: FairCom lacks presence in the general DBMS market and must increase awareness of its brand. It must grow both its marketing organization and sales presence worldwide — a big task for a small company.

Functionality weakness: Survey respondents mentioned some weak or missing functionality, but were not specific.

Fujitsu

Headquartered in Tokyo, Japan, Fujitsu (http://www.fujitsu.com/global/) offers the Fujitsu Open Data Platform (not to be confused with the Open Data Platform consortium for Hadoop standardization). The Open Data Platform comprises Fujitsu Enterprise Postgres in software, an appliance (Fujitsu Integrated System Primeflex), a cloud platform (Fujitsu Cloud IaaS Trusted Public S5) and the Symfoware Analytics Server focused on analytical use cases.

STRENGTHS

Diversity of deployment options and unified interface: Fujitsu covers the full spectrum of deployment options, with software, appliance and cloud offerings, all of which have the same Postgres-compatible interface.

Strong open-source focus: Fujitsu is committed to compatibility with the PostgreSQL open-source DBMS. It claims full compatibility with the Community Edition, while adding additional performance, security and HA features.

Appliance offering: Fujitsu's Primeflex appliance represents a hardware-optimized, open-source alternative to proprietary appliance DBMSs.

CAUTIONS

Limited global recognition: Although strong in Asia/Pacific markets, Fujitsu's global recognition as a DBMS vendor remains weak. Fujitsu was never "considered but not selected" by the surveyed reference customers.

Ease of use: Fujitsu received among the lowest scores in the reference customer survey for ease of operation.

Limited alternative use cases: Fujitsu's offerings are based on PostgreSQL and do not have strong coverage of alternative emerging technologies, such as NoSQL, in-memory computing and multimodel capabilities.

Hortonworks

Headquartered in Santa Clara, California, U.S., Hortonworks (http://www.hortonworks.com/) offers the Hortonworks Data Platform, a commercially supported version of Apache Hadoop, with Apache HBase providing the operational DBMS capabilities. It is available on-premises, as an appliance and through various cloud providers.

STRENGTHS

Market clout: Hortonworks received the second-highest score of any vendor in this Magic Quadrant for market awareness indicators such as Gartner client inquiry counts and press mentions. As one of the main contributors to the Apache Hadoop project, it is highly visible in the market.

Support for high data and transaction volumes: One Hortonworks customer reported the second-largest database by volume and highest number of transactions processed per day.

Strong partner ecosystem: In addition to an extensive partner network, Hortonworks' partnership with Microsoft includes hybrid deployment across on-premises and the cloud via Microsoft Azure HDInsight.

CAUTIONS

Lack of differentiation with Apache HBase: The Hortonworks Data Platform's operational DBMS, Apache HBase, although only one component of the overall platform, is also offered by Hortonworks' competitors **.**

Challenging implementation and use: Reference customers awarded Hortonworks the lowest score of any vendor in this Magic Quadrant for ease of implementation, operation and programming, quality of support and documentation, and complexity of upgrades between versions.

Challenges with sales execution and satisfaction: Reference customers gave Hortonworks the second-lowest score for satisfaction with pricing, and the lowest for ease of doing business. However, they scored it near the top for overall value for the money.

IBM

Headquartered in Armonk, New York, U.S., IBM (http://www.ibm.com/en-us/homepage-b.html) offers BigInsights (Hadoop), DB2 for z/OS, DB2 for Linux, Unix and Windows, Informix and Cloudant. Varying deployment models include hardware bundling and appliances, and

deployment in IBM's SmartCloud and third-party clouds.

STRENGTHS

Performance and features: IBM's multiple enterprisewide, mission-critical DBMSs offerings challenge other large DBMS vendors by offering very rich features: a JSON API for document-style capability; cloud delivery via Cloudant and Bluemix; Resource Description Framework (RDF) for graph models; support for geospatial and time series capabilities and a significant recent commitment to support Apache Spark. Although spread across multiple offerings, these features cover most use cases very thoroughly.

Hardware integration: DB2 for z/OS creates an efficient HTAP architecture by routing analytics to the IBM DB2 Analytics Accelerator (IDAA for z/OS), reducing the use (and cost) of System z MIPS. Other IBM products, such as IBM PureData System for Transactions, use integrated hardware and software.

Global presence: IBM provides support, implementation and services in multiple vertical markets. It has one of the IT industry's largest networks of software, hardware and service partners.

CAUTIONS

Sales and marketing execution: Gartner's DBMS revenue figures indicate that IBM's market share declined for the third consecutive year in 2014. IBM is fueling its growth by introducing alternative model types, such as Cloudant, and support for Apache Spark, yet a low volume of client inquiries to Gartner suggests that IBM is early in making this investment.

Pricing: For the third successive year, survey participants gave IBM low scores for suitability of pricing model. Furthermore, they ranked it near the bottom for their experience of doing business with it. IBM is trying to address these issues with aggressive pricing, bundling and simplification efforts.

Low performance scores: Surprisingly, surveyed IBM customers rated it in the bottom third for high transaction rates, and near the bottom for performance. Additionally, IBM scored below the mean for high-speed ingestion and automated data distribution.

InterSystems

Headquartered in Cambridge, Massachusetts, U.S., InterSystems (http://www.intersystems.com/) was founded in 1978. It markets Caché, which was originally an object-oriented DBMS but is now a hybrid, multimodel, NoSQL/SQL transaction engine. Caché has a strong position in the healthcare sector.

STRENGTHS

Functionality: Caché is a multimodel DBMS that supports a wide variety of data types with object, NoSQL and SQL models. It also has strong replication capabilities for HA/DR, as is shown by strong scores from its reference customers.

Focused execution: After establishing a solid product and a large ISV ecosystem that is embraced by the healthcare industry, InterSystems is addressing other markets and achieving early success. Of its surveyed customers, 85% plan to buy more of its software (the highest figure for a vendor in this Magic Quadrant), up from 60% in 2014.

Performance: For the second year in a row, InterSystems received some of the highest survey scores for the overall performance of Caché. It also had the second-highest number of reference customers who mentioned no problems.

CAUTIONS

Market perception: Although InterSystems has branched out from the healthcare sector, it is still generally perceived as being a healthcare-only provider. It must develop a stronger market vision to move into the broader operational DBMS market.

Marketing: InterSystems is a midsize DBMS vendor with potential for continued growth, especially as 85% of its reference customers plan to purchase more from it. Investment in sales and marketing must continue if InterSystems is to challenge the market leaders.

Documentation: InterSystems received relatively low scores from reference customers for its documentation.

MapR

Headquartered in San Jose, California, MapR (https://www.mapr.com/) provides MapR Enterprise Database Edition, which includes MapR-DB and MapR's Hadoop distribution. MapR-DB is an operational DBMS compatible with Apache HBase. It is available on-premises and through various cloud providers.

STRENGTHS

Reliability and performance: Reference customers gave MapR high scores for its HA/DR capabilities and performance.

Market responsiveness: MapR has addressed multiple market needs by offering training and expanding its cloud offerings and auditing support.

Ease of doing business: MapR received the second-highest score from reference customers for their overall experience of doing business with a vendor. Reference customers said they selected MapR over similar competitors due to its lower operational cost.

CAUTIONS

Speed of community updates: Reference customers highlighted the amount of time it takes for updates originating in the open-source community to make their way into the MapR distribution, such as Apache Spark.

Marketing challenges: MapR lacks the visibility of many of its competitors. This drawback is likely exacerbated by its focus on both operational and analytical use cases.

Functionality: Almost one-third (30%) of its reference customers identified missing functionality, such as auditing and easy backward-compatibility, as a challenge. Future releases should address several, if not all, of these gaps.

MariaDB

MariaDB (http://www.mariadb.com/) , which is headquartered in Espoo, Finland, markets MariaDB, an open-source, in-memory-capable, multimodel RDBMS fully compatible with Oracle MySQL; MariaDB MaxScale, a database proxy for scaling MySQL and MariaDB; and MariaDB Enterprise, a commercially supported bundle with enterprise-targeted add-on components. All are available on Linux, where MariaDB is the default DBMS in the Red Hat and SUSE distributions, and on Microsoft Windows.

STRENGTHS

Rich functionality: MariaDB offers multiple storage engines, tunable persistence, ACID support with the InnoDB/XtraDB engine, graph storage with Open Query Graph (OQGraph), clustering, scalability with MariaDB MaxScale, and support for Apache Cassandra and JSON.

Value and reliability: Reference customers scored MariaDB second-highest for value for money and "no problems encountered," with a low incidence of major outages.

Strong community and partner network: MariaDB's vibrant MySQL user community and ecosystem includes contributions from Google and partnerships with AWS (for Amazon RDS for Aurora), IBM, Linux distribution vendors, Pivotal, Fusion-io, organizations offering products for special-purpose storage engines, management, backup and HA, and service providers.

CAUTIONS

Increased competition: Competition from other MySQL and MySQL-compatible vendors has grown substantially, with Oracle's EU consent decree now expired, Percona and MemSQL gaining visibility, and AWS's release of Amazon RDS for Aurora.

Scale and speed: MariaDB's reference customers quantified the size of their largest database at only a few hundred gigabytes, with transaction rates near the lowest overall. MariaDB has public multiterabyte references from Wikipedia and Booking.com, but will require more terabyte-size and higher-transaction-rate reference customers to compete at the high end.

Focus on emerging market influences: MariaDB scored behind most of the other vendors for emerging market needs, such as support for the IoT and geodistribution.

MarkLogic

Headquartered in San Carlos, California, MarkLogic (http://www.marklogic.com/) offers an ACID NoSQL document store DBMS in Essential Enterprise, Global Enterprise and Mobile editions, and a free, fully featured developer version. It can be deployed via leading cloud and virtualization platforms, including those of AWS and VMware.

STRENGTHS

Advanced features: MarkLogic version 8, released in early 2015, adds JavaScript and JSON storage support, updated SPARQL language and inferencing, bitemporal capabilities and improved incremental backup. MarkLogic's roadmap points to additional governance and semantic capabilities.

Solid customer base and growth: MarkLogic has shown substantial growth in commercial customer numbers and revenue. It raised $102 million in 2015 to aggressively expand its geographical reach (one of last year's Cautions for this vendor).

Reliability: MarkLogic received one of the top three scores for lowest outage time experienced.

CAUTIONS

Risks of aggressive expansion: MarkLogic's overseas expansion into eight new geographies and several additional industries is admirably aggressive, but may represent a large gamble at such a rapid pace. Customers should monitor the company's focus and attention to relationships.

Pricing challenges: Surveyed customers ranked MarkLogic low in terms of value for money and suitability of pricing model.

Difficult to use: For the second successive year, MarkLogic received very low marks from survey respondents for ease of programming, ease of operation and ease of implementation.

McObject

Headquartered in Issaquah, Washington, U.S., McObject (http://www.mcobject.com/) offers eXtremeDB version 6.0, a small-footprint relational in-memory DBMS with extended array and vector support. Since 2001, millions of copies of eXtremeDB have been deployed worldwide in embedded and real-time applications.

STRENGTHS

Functionality: Typically embedded, eXtremeDB provides full ACID and tunable persistence, multiversion concurrency control (MVCC), and clustering and hybrid storage for scalability.

Partnerships: McObject has partnerships with EMC, HP, IBM, SanDisk and others. Numerous distributors market its product, and it has customers worldwide.

Major shift in doing business: Last year, McObject received the lowest score for ease of doing business, but in our 2015 survey it received an above-average score in this regard.

CAUTIONS

Market clout: eXtremeDB's engines and horizontal and vertical scalability remain little-known in the market, as is indicated by our client inquiry service's receipt of no inquiries about eXtremeDB over the past year.

Increasing competition: In-memory capabilities have become pervasive across the DBMS market. McObject, previously alone in the market in this regard, is now challenged (especially as a stand-alone product) by many DBMS vendors, large and small.

Customer satisfaction: Surveyed customers gave McObject low scores for HA/DR, ease of implementation and ease of programming. These are not all new issues and they may reflect the use of lower-level APIs in eXtremeDB.

MemSQL

MemSQL (http://www.memsql.com/) was founded in 2011 and is headquartered in San Francisco, California, U.S. It provides the MemSQL distributed in-memory ACID-compliant RDBMS, which converts SQL to C++ through code generation for increased efficiency and performance, in community, enterprise and federal editions. It is compatible with MySQL and supports MySQL-based applications, as well as application connectivity via Open Database Connectivity (ODBC) and Java Database Connectivity (JDBC).

STRENGTHS

Innovation: MemSQL's functionality meets both traditional and emerging requirements (such as HTAP). It scored near the top overall for its R&D model and platform/technology support, and it continues to innovate to meet emerging market needs.

Rich functionality: MemSQL offers ACID compliance, is fully in-memory, supports geodistribution, and is multimodel, with support for JSON, geospatial data and Apache Spark. The vendor also provides a complete operations center for management and monitoring.

Ease of programming and implementation: Reference customers gave MemSQL the highest overall score for ease of programming. There was not a single report of difficulty in implementation or use.

CAUTIONS

Limited market share and financial strength: MemSQL has the lowest estimated market share of any vendor in this Magic Quadrant. It will need to increase its customer base and visibility quickly in order to increase its financial strength, if it is to compete and execute effectively.

Challenges with customer loyalty: Only 30% of MemSQL's reference customers indicated an intention to purchase additional licenses, products or features from MemSQL. This is probably due to low customer numbers and limited use.

Limited geographic reach: MemSQL has limited global presence for sales and support. Although it offers worldwide support, with staff present in the U.S., Eastern Europe, the Middle East and India, its limited regional marketing and sales staff and global partners limit its ability to grow its presence.

Microsoft

Headquartered in Redmond, Washington, U.S., Microsoft (http://www.microsoft.com/) markets its SQL Server DBMS for the operational DBMS market, as well as the Microsoft Azure SQL Database (a DBMS platform as a service), and the NoSQL DBMSs Microsoft Azure DocumentDB and Azure Tables.

STRENGTHS

Market vision: Microsoft's market-leading vision consists of NoSQL (Azure DocumentDB and Azure Tables), cloud offerings (including hybrid cloud), the use of analytics in transactions (HTAP) and support for mobility. Its vision for in-memory computing across products, hybrid cloud implementations and a "cloud first" strategy is ahead of its competitors.

Strong execution: Microsoft SQL Server is an enterprisewide, mission-critical DBMS capable of competing with products from the other large DBMS vendors. Gartner's 2014 market share data shows Microsoft as the No. 2 vendor in terms of total DBMS revenue.

Performance and support: Reference customers were very positive, with the performance of SQL Server, documentation, support, ease of installation, integration and operation all rated highly.

CAUTIONS

Market image: Although SQL Server is an enterprise-class DBMS, Microsoft continues to struggle to dispel a perception of weakness in this area. Inquiries from Gartner clients demonstrate a continuing perception that SQL Server is not used for mission-critical enterprisewide applications — a view that inhibits wider use of SQL Server as a primary, enterprise-class DBMS.

Lack of an appliance: Microsoft still lacks an appliance for transactions (one comparable to its Microsoft Analytics Platform System, formerly Parallel Data Warehouse). By contrast, its major competitors (IBM, Oracle and SAP) all offer one, as does one new entrant to the Magic Quadrant (Fujitsu).

Pricing: Microsoft received below-average ratings for pricing suitability, a problem that stems from the pricing model changes implemented in SQL Server 2012. Microsoft's cloud offerings appear to be partially mitigating this concern.

MongoDB

Headquartered in New York City, New York and Palo Alto, California, U.S., MongoDB (https://www.mongodb.com/) offers MongoDB Enterprise Advanced, a document-style DBMS, as well as cloud and on-premises management tools.

STRENGTHS

Robust DBMS vision: MongoDB has defined an expansive roadmap, moving beyond its NoSQL roots to encompass new use cases and to disrupt traditional vendors. It appears to be executing on that vision.

Service delivery: Reference customers rated MongoDB very highly for professional services and ease of doing business.

Revitalized executive team: MongoDB has completed restaffed its executive team, bringing in significant experience in sales and marketing execution. In addition, its partnership network has more than doubled in size, increasing the company's global reach.

CAUTIONS

Customer experience scores: MongoDB's reference customer scores remain high, but its scores in most customer experience categories were down from last year.

Poor performance in pilots: Over one-third (38%) of the survey respondents that did not select MongoDB cited poor performance in pilots and proofs of concept as the reason, while more than one-quarter (27%) selected "Other," unspecified reasons for not selecting MongoDB.

Pricing challenges: Reference customers rated the suitability of MongoDB's pricing method above average, but recent inquiries from Gartner clients indicate dissatisfaction with renegotiated contract pricing.

Neo Technology

Neo Technology (http://www.neotechnology.com/) is headquartered in San Mateo, California, U.S. Neo4j is a native graph-style NoSQL DBMS capable of handling transactions with ACID support and clustering for scalability and HA. The first generally available version of Neo4j was released in 2010 as an open-source offering. Shortly thereafter, Neo Technology became an incorporated company, based in Silicon Valley. Neo4j is offered as both an open-source Community Edition and an Enterprise Edition.

STRENGTHS

Native graph DBMS: Neo4j is a native graph-style DBMS (as opposed to an existing DBMS to which graph capabilities have been added). It is engineered for performance with transactional ACID capabilities in a single instance, offers tunable consistency across clusters for scalability, and features support for use cases beyond basic graph functionality.

Support and professional services: Neo received high marks for its support and services in the reference customer survey.

Growth and market presence: Neo continues to generate strong interest in, and growth from, both its open-source version and the Enterprise Edition. It has a strong market presence in the graph DBMS space.

CAUTIONS

Graph model: The graph DBMS model can be difficult to understand, which lengthens the learning curve. Neo will face increased competition as other vendors, in both the relational and the NoSQL space, add graph capability to their offerings.

Challenging upgrades: Reference customers identified challenges when upgrading to new versions, particularly in the area of HA/DR.

Data ingestion performance: Reference customers again identified data ingestion as a challenge. Neo received among the lowest scores in the reference customer survey for data ingestion performance, although customers do report significant improvements in the latest release.

NuoDB

Headquartered in Cambridge, Massachusetts, U.S., NuoDB (http://www.nuodb.com/) provides an operational SQL DBMS designed to scale horizontally (geographically) and elastically. NuoDB supports on-premises, cloud and hybrid cloud deployments, and is available in Community and Enterprise Editions. NuoDB is also available on the Amazon Cloud Marketplace.

STRENGTHS

Geodistributed, flexible deployment options: NuoDB's geodistributed SQL database with ACID transactional consistency can run on-premises, in the cloud, or in hybrid cloud configurations spanning multiple cloud data centers and on-premises implementations.

Delivery and support: NuoDB received high scores for ease of programming and implementation, support and documentation, and pricing. Overall scores for customer support and ease of doing business were also excellent.

Multimodel support: In addition to an ACID-compliant SQL database implementation, NuoDB offers a capable multimodel DBMS with NoSQL engines supporting graph, document and key-value functionality.

CAUTIONS

Inconsistent experience: Although NuoDB received several top scores for service delivery, documentation and support, reference customers who were not full of praise were highly critical. As a relatively new vendor, NuoDB is still perfecting its service and support.

Product maturity and stability: Early experiences with NuoDB (as reported in responses to the customer survey) reflect some operational availability challenges, although customers do report improvements with newer releases. Additionally, fewer than half the reference customers provided were in full production with NuoDB.

Limited market awareness: The reference customer survey data indicates that NuoDB is rarely shortlisted by those who do not choose it. Limited global presence and a nascent partner system mean that NuoDB has yet to attract the numbers of customers needed to establish market momentum.

Oracle

Headquartered in Redwood Shores, California, U.S., Oracle (http://www.oracle.com/index.html) markets a complete set of DBMS products for operational systems. These include Oracle Database, Oracle TimesTen, Oracle Berkeley DB, Oracle NoSQL Database and MySQL. In addition

to stand-alone software and cloud versions, several of Oracle's DBMSs are available in engineered systems (appliances).

STRENGTHS

Broad range of offerings: Oracle still has the broadest product portfolio in this market, covering DBMSs for multiple purposes (RDBMS, NoSQL, streaming data and mobile). Also, it offers delivery in the cloud, on appliances and as stand-alone software. According to Gartner's 2014 statistics, Oracle remains the leader for DBMS market share by revenue.

Functionality and innovation: Oracle offers extensive functionality, with many new features (such as JSON data) and options such as Oracle Database In-Memory and Oracle Multitenant. Oracle is also pioneering DBMS functionality on silicon, with new SPARC M7 and T7 chips scheduled for delivery in 2015.

Pricing flexibility: In response to customer demand, Oracle now offers Capacity on Demand licensing and flexible configurations for its DBMS on its Exadata Engineered System. This helps reduce entry and upgrade costs, both of which had previously been identified as barriers to adoption.

CAUTIONS

Perceived lock-in: Although Oracle's DBMS are fully portable across supported platforms, Gartner's client inquiry service continues to indicate a reluctance to purchase Engineered Systems such as Exadata and SuperCluster.

Customer value proposition: As in 2014, reference customers gave Oracle the lowest scores in this Magic Quadrant for value, based on cost and the suitability of the pricing model. Over 40% of all the survey respondents who did not choose an Oracle DBMS identified cost as the reason.

Increasing disillusionment: A growing number of users of Gartner's client inquiry service express dissatisfaction with Oracle's "draconian" pricing and auditing policies; the number of these users looking for alternatives to Oracle software is increasing

Orient Technologies

Located in London, U.K., Orient Technologies (http://www.orientechnologies.com/) ' operational DBMS, OrientDB, although predominantly a graph database, includes features found in document store databases, making it multimodel. The database can run on-premises, but is also embeddable, and there is a cloud offering available through AWS, Microsoft Azure and DigitalOcean.

STRENGTHS

Multimodel: Reference customers are using both the document and the graph capabilities of OrientDB, and few are using other NoSQL databases. This illustrates the applicability of the multimodel approach to multiple use cases.

Solid technology: In addition to multimodel capabilities, OrientDB has functionality not found in other graph-style DBMSs (such as support for JSON and SQL), as well as stronger security and the ability to be embedded.

Value for money: Reference customers gave Orient top marks for pricing suitability. They also rated it very highly for value for money and ease of doing business.

CAUTIONS

Small size: Orient is one of the smaller vendors in this Magic Quadrant, and has limited resources. Although it is gaining some large customers and growing its organization globally, as it grows it will encounter many challenges in terms of support, sales and marketing.

Limited global footprint: Although it is beginning to increase its marketing, and although its list of global customers is growing, Orient has not marketed its offerings effectively to a wide geographical base of prospective customers.

Support, documentation and bugs: Orient received one of the lowest scores in our survey for support and documentation. Furthermore, a high percentage of its reference customers cited bugs in its software as a problem.

Percona

Headquartered in Durham, North Carolina, U.S., Percona (http://www.percona.com/) delivers enterprise-class, open-source versions of MySQL via its Percona Server and Percona XtraDB Cluster products, and of MongoDB via Percona TokuMX and Percona Server for MongoDB. Percona provides support, consulting and managed services for MySQL, MariaDB, Amazon RDS, OpenStack and MongoDB, as well as its own solutions.

STRENGTHS

Commitment to open-source software: Percona contributes all its innovations to the community versions of MySQL and MongoDB, including enterprise-class features such as clustering. Only its management and monitoring software is proprietary.

Satisfied customers: Percona's reference customers scored it highest of all the vendors for overall customer sentiment, highest for professional services, second-highest for automated data distribution capabilities, and in the top four for customer support track record.

Value for money: Reference customers scored Percona very highly for value for money, behind only FairCom.

CAUTIONS

Limited industry strategy: Percona does not provide any industry-specific solutions or functionality, and its sales teams lack this level of specialization. It is therefore limited in its ability to appeal to customers and to compete at this level.

Limited focus on emerging market influences: Percona provides both relational and NoSQL DBMSs, which enables it to support various consistency models and geodistribution via TokuMX. However, there are no stated plans to extend TokuMX into a multimodel-capable engine, like its NoSQL competitors. Furthermore, there is no in-memory column store for analytics, and there are no stated plans to support IoT data and applications.

Limited differentiation: Percona's offerings compete directly with those of MariaDB, MongoDB, Oracle (MySQL) and AWS (Amazon RDS for Aurora), vendors that are placed higher on the Ability to Execute axis. Without significant functionality differentiation or industry solutions, Percona may lose out to competitors.

Redis Labs

Headquartered in Mountain View, California, U.S., Redis Labs (http://www.redislabs.com/) provides a commercially backed implementation of the Redis data structure store (an advanced key-value-like DBMS) in both cloud (Redis Cloud) and on-premises (Redis Labs Enterprise Cluster) versions. Redis Labs adds core functionality to open-source Redis for clustering and HA, and advanced capabilities for data processing over and above traditional key-value implementations. It also provides MemcacheD Cloud.

STRENGTHS

Performance and caching: Redis Labs customers reported transaction volumes and peak rates that were among the highest for the vendors in this Magic Quadrant. Scores for overall performance were also very good. Redis also serves as a core caching engine for other complementary database technologies.

Customer experience: Redis Labs topped the reference customer scores for overall experience of doing business with a vendor. Its scores for ease of implementation, ease of operation, HA/DR, ease of programming and professional services were also among the highest.

Vertical business solutions: Redis Labs provides a library of vertically focused functions for gaming, location-based applications, online advertising and the IoT, which adds to its ease of implementation.

CAUTIONS

Growing perceived competition: Redis Labs' data structure store implementation is often confused with traditional key-value databases. Although it offers significant capabilities over traditional key-value data stores, major vendors will continue to add basic key-value functionality (such as in Microsoft Azure Tables and Oracle NoSQL, both already available), which will create additional competition.

Market presence: In the reference customer survey, Redis Labs was evaluated only 3% of the time as a candidate for operational DBMS use cases by those not selecting it. This indicates limited awareness of Redis Labs and the full capabilities it offers.

Revenue model: Redis Labs' revenue remains relatively modest, according to Gartner's estimates. Extra funding will be needed to achieve the desired market growth. A recent $15 million of Series "B" round venture capital funding should help.

SAP

Headquartered in Walldorf, Germany, SAP (http://go.sap.com/index.html) has several DBMS products that are used for transaction systems: SAP Adaptive Server Enterprise (ASE), SAP SQL Anywhere and SAP Hana. All three are available as software only (SAP Hana as Tailored Datacenter Integration [TDI]), while SAP Hana is also marketed as an appliance. SAP ASE and SAP Hana are also available as cloud offerings.

STRENGTHS

Strong DBMS growth: Gartner's market statistics continue to show strong growth for SAP across all three DBMS products. According to SAP, Hana had over 8,000 customers as of 2Q15.

In-memory DBMS leader: SAP remains a leader with its vision for HTAP, with over 2,000 customers of Suite on Hana and S/4Hana, where the transactions and analytics run on a single, in-memory column-store DBMS.

Cloud support: With the introduction of the Hana Cloud Platform (HCP), SAP has combined SAP Hana and SAP ASE into a single cloud dbPaaS offering, including both in-memory and traditional DBMS technology.

CAUTIONS

Assertive marketing and selling: A major concern is the zealous way in which SAP drives clients to its SAP Hana software as a general-purpose platform. Users of Gartner's client inquiry service provide evidence that the platform is not yet sufficiently functional for this.

Quality concerns: The number of survey respondents reporting software and bugs was the highest of all the vendors in this Magic Quadrant. Coupled with the second-lowest score for support, this raises questions about the quality of SAP's DBMS software and its ability to support it.

Operational perception: Although SAP has made improvements to its software and services, the surveyed customers (for SAP Hana, SAP ASE and SAP SQL Anywhere) awarded it low scores for professional services, performance and HA/DR capabilities, and the second-lowest score for their experience of doing business with a vendor.

TmaxSoft

Headquartered in Bundang-gu in the Seoul Capital Area, South Korea, TmaxSoft (http://www.tmaxsoft.com/) (formerly TmaxData), provides Tibero, an SQL RDBMS featuring various clustering options, integrated encryption and compatibility with other vendors' DBMS products. It is available on-premises, in the cloud and via an appliance.

STRENGTHS

Customer support satisfaction: Reference customers scored TmaxSoft highest overall for lack of problems encountered, extremely straightforward upgrades between versions, and intention to purchase additional licenses, products or features over the next 12 months.

High compatibility and reduced total cost of ownership (TCO): Tibero maintains high compatibility with many DBMSs (EnterpriseDB Postgres Plus, IBM DB2, Microsoft SQL Server and Oracle Database) for code-free migration and operation at a lower TCO.

Support for mixed workloads: Tibero includes several features for efficient HTAP processing, including bitmapped indexes, specialized transformation for star schemas with optimized join queries, and automatic creation of partitions by insertion time frame.

CAUTIONS

Limited geographic traction: TmaxSoft has yet to gain significant traction outside South Korea, but it is addressing this by opening regional headquarters in the U.S., Europe and Asia/Pacific. It is also opening more local offices worldwide.

Uneven customer experience: Some reference customers gave TmaxSoft a relatively low score for their experience of doing business with the company. Users of the Gartner's client inquiry service have also indicated some satisfaction issues.

Limited support for emerging requirements: Tibero does not yet include support for many emerging needs, such as multimodel support and geodistribution. However, many of these features are planned for the next version.

VoltDB

Headquartered in Boston, Massachusetts, U.S., VoltDB (http://voltdb.com/) markets an open-source, in-memory row-store operational RDBMS for shared-nothing clusters. It is available in several package formats for leading cloud and virtualization platforms.

STRENGTHS

Operational integration: RDBMS, ACID support, tunable consistency, fault tolerance, JSON/SQL integration, and Hadoop and Kafka support and partnerships drive VoltDB's role in emerging "fast data" use cases requiring a high-speed transactional engine. Over half of VoltDB's customers use its software for HTAP.

Performance: As expected for an in-memory DBMS vendor, VoltDB received high scores from surveyed reference customers for the overall performance of its product, including the highest score for high-speed data ingestion.

Customer satisfaction: VoltDB received very high survey ratings for value for money and ease of doing business. Most surveyed customers are using its HA/DR and automated data distribution capabilities, and they rate them well.

CAUTIONS

Feature gaps: VoltDB's HTAP customer results are encouraging, but its geospatial support remains a work in progress. None of the surveyed customers use its offering for distributed variable data use cases.

Slow expansion: VoltDB's small, U.S.-centric sales organization and modest ecosystem are growing, thanks to the addition of selling partners, but the company's small size still limits its ability to reach new customers. VoltDB's customer count remains low, as does the volume of inquiries Gartner receives about this vendor.

Funding: VoltDB's revenue remains relatively modest, according to Gartner's estimates. OEM sales help with revenue generation, and additional funding has continued to arrive in relatively modest increments, with an additional $10 million round of venture capital funding. VoltDB needs to increase its marketing expenditure to create a fast-growth environment.

Vendors Added and Dropped

We review and adjust our inclusion criteria for Magic Quadrants and MarketScopes as markets change. As a result of these adjustments, the mix of vendors in any Magic Quadrant or MarketScope may change over time. A vendor's appearance in a Magic Quadrant or MarketScope one year and not the next does not necessarily indicate that we have changed our opinion of that vendor. It may be a reflection of a change in the market and, therefore, changed evaluation criteria, or of a change of focus by that vendor.

Added

Amazon Web Services

Fujitsu

Hortonworks

MemSQL

Orient Technologies

Percona

Redis Labs

Dropped

Pivotal: This vendor participated in the complete Magic Quadrant process by submitting a response to our RFI and supplying details of the requisite number of reference customers for the survey; originally, therefore, it appeared to qualify for inclusion in this Magic Quadrant. In September 2015, Pivotal informed Gartner that it had removed GemFire XD and SQLFire from sale in December 2014, but Gartner understood that, in late 2013, SQLFire (an in-memory DBMS) and GemFire (an in-memory data grid) had been combined into a single product, GemFire XD, which was renamed GemFire in 2014. However, Pivotal also informed us in September 2015 that this was not the case — that GemFire is not a DBMS but only a data grid. As such, Pivotal no longer qualifies for inclusion in this Magic Quadrant and has been dropped.

Inclusion and Exclusion Criteria

To be included in this Magic Quadrant, vendors and products had to meet the following criteria:

Software availability: Vendors must have DBMS software that has been generally available for licensing or supported download for at least a year, as of midnight, U.S. Eastern Daylight Time on 1 July 2015.

Software releases: We use the most recent generally available release of the software to evaluate current technical capabilities. We do not consider beta, "early access," "technology preview," "ramp-up" or other releases that are not generally available. For reference customers and their survey responses, all versions currently used in production are admissible. When older versions are in use, we consider whether later releases may have addressed reported issues, but also the rate at which customers move to newer versions.

Feature availability: Product evaluations include technical capabilities, features and functionality present in the product or supported for download through midnight, U.S. Eastern Daylight Time on 1 July 2015. Capabilities, product features or functionality released after this date could be included at Gartner's discretion and in a manner Gartner deemed appropriate to ensure the quality of our research on behalf of our nonvendor clients. We may consider how such later releases might reasonably impact the end-user experience.

Customers and revenue: Vendors must generate a minimum of $20 million in verifiable annual software revenue, or maintain a minimum of 100 verifiable and distinct organizations with operational DBMSs in production. In addition, a minimum of 10 customer responses to Gartner's survey questionnaire was required. Revenue can be from licenses, support and/or maintenance. Gartner may include additional vendors, based on undisclosed references, in cases of known use for classified but unspecified purposes. For this year's Magic Quadrant, the questionnaire was produced in English only.

Support: Vendors must provide support for these operational DBMS product(s). For an open-source DBMS, maintenance and support must be available from a vendor that owns, or has substantial control over, the source code and be offered with a full General Public License (or an alternative).

Services : Vendors must demonstrate their ability to deliver the necessary services to support transaction systems via the establishment and delivery of support processes, professional services, and/or committed resources and budget.

Geographical availability: Vendors must demonstrate support for operational DBMS customers in at least two of the major geographic regions: North America, Latin America, Europe, the Middle East and Africa, and Asia/Pacific.

Excluded products: Some products are explicitly excluded from this Magic Quadrant.

Products that "add a layer" to and that require or embed a complete or near-complete implementation of another commercially marketed product (such as Oracle MySQL) are excluded.

Highly specialized engines, such as graph-only, text-only or object-oriented DBMSs, which may perform some transactions in targeting small subsets of operational use cases are excluded.

Products covered by technologies listed in the Replacement phase of "IT Market Clock for Database Management Systems, 2015" are excluded.

"Streaming" engines, whose use cases are dominated by immediate event processing, and which are rarely, if ever, used for subsequent management of the data involved, are excluded.

Other product categories excluded from this Magic Quadrant are:

- Embedded-only DBMS products
- Data warehouse-only DBMS products
- Prerelational DBMS products
- Data grid products
- Complex-event-processing engines

Evaluation Criteria

Ability to Execute

Ability to Execute criteria are primarily concerned with vendors' capabilities and maturity. Criteria under this heading also consider products' portability and their ability to scale and run in different operating environments (giving the customer a range of options). Ability to Execute criteria are critical to customers' satisfaction and success with a product, so interviews with, and survey responses from, reference customers are weighted heavily throughout.

Product or service includes the technical attributes of the DBMS(s), as well as features and functions built specifically to manage the DBMS when used as platform for transactions, interactions and observations. We include HA/DR, performance and scalability, and support for multiple deployment options (such as virtualization cloud and hybrid cloud/on-premises), multiple development languages, and new hardware and memory models. These attributes are evaluated across a variety of database sizes and application workloads. We also consider the automated management, tools and resources necessary to manage a database environment, especially as it scales to more complex application workloads. Finally, we consider the flexibility of the DBMS to incorporate new data types, application types, and new requirements for distributing data across multiple servers and geographies.

Overall viability includes corporate aspects such as the skills of the personnel, financial stability, research and development (R&D) investment, and merger and acquisition activity. It also covers the management's ability to respond to market changes and the company's ability to weather

market difficulties (crucial for long-term survival). Vendors are further evaluated on their capability to establish dominance in meeting a specific market demand.

Sales execution/pricing covers the price/performance and pricing models of the DBMS, and the ability of the sales force to manage accounts (judging from feedback from interviews, surveys and inquiry interactions with our clients). We also consider the market share of the DBMS software product(s). Also considered are the diversity and innovative nature of the vendor's packaging and pricing models, including the ability to promote and sell the products globally.

Market responsiveness/record includes the diversity of the vendor's offerings in response to changing market demand (for example, its ability and flexibility to offer appliances, cloud deployment, new data types and new programming requirements). We consider general market perceptions of vendors and their products. We assess vendors' ability to adapt to market changes during the previous 18 months and their flexibility in response to market dynamics over a longer period.

Marketing execution evaluates such activities as lead generation, including traditional methods and Internet-enabled trial software delivery, and the execution of channel development through partnering agreements (including co-seller, co-marketing and co-lead management arrangements). Also considered are vendors' coordination and delivery of education and marketing events throughout the world and across vertical markets, and the creation and support of "community" activities that help to raise awareness and develop skills among buyers and prospective buyers.

Customer experience is assessed primarily on the basis of interviews with, and survey responses from, vendors' reference customers, as well as discussions with users of Gartner's inquiry service during the previous six quarters. We consider vendors' track record of proofs of concept, customers' perceptions of their product(s), and customers' loyalty to the vendors (this reflects their tolerance of vendors' practices and can indicate their level of satisfaction). Additionally, customer input regarding the applicability of products to limited use cases can be considered significant, depending on the success or failure of a vendor's approach to this market.

Operations covers the alignment of a vendor's organization, as well as whether and how this enhances its ability to deliver. Aspects considered include field delivery of appliances, manufacturing (including the identification of diverse geographic cost advantages), internationalization of the product(s) in light of both technical and legal requirements, and adequate staffing.

Table 1. Ability to Execute Evaluation Criteria

Evaluation Criteria	**Weighting**
Product or Service	High
Overall Viability	Low
Sales Execution/Pricing	Medium
Market Responsiveness/Record	High

Marketing Execution	Medium
Customer Experience	High
Operations	Low

Source: Gartner (October 2015)

Completeness of Vision

Completeness of Vision encompasses a vendor's abilities to understand the functional capabilities needed to support operational environments, to develop a product strategy that meets the market's requirements, to comprehend overall market trends, and to influence or lead the market when necessary. A visionary leadership role is necessary for the long-term viability of both product and company. A vendor's vision may be demonstrated — and improved — by its willingness to extend its influence throughout the market by working with independent third-party application software vendors that deliver both added functionality for the operational environment and commercial off-the-shelf software. A successful vendor will be able not only to understand the competitive landscape of operational transactions but also to shape its future.

Market understanding assesses a vendor's ability to understand the market and shape its growth and vision. In addition to examining a vendor's core competencies in this market, we consider its awareness of new trends, such as the increasing sophistication of end users, growing scalability needs (especially across server clusters), the cloud as a platform for DBMSs, the demand for in-memory computing and HTAP, the use of new consistency models, and the growing desire to use data structures other than relational ones.

Marketing strategy refers to a vendor's marketing themes, product R&D focus, and ability to choose appropriate target markets and third-party software vendor partnerships to enhance the marketability of its products. For example, we consider whether the vendor encourages and supports independent software vendors in its efforts to support its DBMS in native mode (via, for instance, co-marketing or co-advertising with "value-added" partners). This criterion includes the vendor's responses to the market trends identified above and any offers of alternative solutions in its marketing materials and plans.

Sales strategy assesses how a vendor designs and targets its channels and partnerships to assist with selling. It is especially important for younger organizations, as sales strategy can enable them to greatly increase their market presence, while maintaining lower sales costs (for example, through downloadable free community editions, co-selling and joint advertising). This criterion also covers a vendor's strategy for communicating its vision to its field organization and, therefore, to existing and prospective customers.

Offering (product) strategy covers the design of product packaging and deployment options, including the availability of developer editions, cloud versions and appliances based on the vendor's DBMS. Vendors should demonstrate a diverse strategy that enables customers to choose what they need to build a complete solution for an operational environment. Also covered are partners' offerings that include technical, marketing, sales and support integration.

Business model covers how a vendor's model of a target market combines with its products and pricing, and whether the vendor can generate profits with this model, judging from its packaging and offerings. Also included are pricing innovations and strategies, such as new licensing arrangements and cloud-based models for elastic provisioning to support peak demand. Additionally, we consider reviews of publicly announced earnings and forward-looking statements relating to an intended market focus. For private companies, and to augment publicly available information, we use proxies for earnings and new customer growth, such as the number of Gartner clients who indicate interest in, or awareness of, a vendor's products during calls to our inquiry service.

Vertical/industry strategy affects a vendor's ability to understand its clients. We consider aspects such as vertical-market sales teams and partnerships with vertical-market service providers.

Innovation assesses a vendor's approach to developing new functionality that aligns with its market and offering strategies by allocating and managing R&D expenditure and leading the market in new directions. The use of new storage and hardware models are key examples of such an approach.

Geographic strategy, including a vendor's worldwide reach, is evaluated by considering a vendor's plan to use its resources in different regions, as well as the resources of its subsidiaries and partners. This criterion considers a vendor's plan for supporting clients throughout the world, around the clock and in many languages. Anticipation of regional and global economic conditions is also considered.

Table 2. Completeness of Vision Evaluation Criteria

Evaluation Criteria	**Weighting**
Market Understanding	High
Marketing Strategy	Medium
Sales Strategy	Medium
Offering (Product) Strategy	High
Business Model	Low
Vertical/Industry Strategy	Medium
Innovation	High
Geographic Strategy	Medium

Source: Gartner (October 2015)

Quadrant Descriptions

Leaders

Leaders generally demonstrate the most support for a broad range of operational applications, based on support for a wide range of data types and multiple use cases. These vendors demonstrate consistent customer satisfaction and strong customer support. Many have competed in this market for many years, and have built a wide partner ecosystem for their products. Hence, Leaders generally represent the lowest risk for customers in the areas of performance, scalability, reliability and support. As the market's demands change, so Leaders demonstrate strong vision in support not only of the market's current needs, but also of emerging trends. Finally, the messaging, product R&D and delivery of Leaders are in line with today's market and with new trends in both DBMS software and hardware technology.

Challengers

Challengers are stable vendors with strong, established offerings but a relative lack of vision. It is normal for some vendors to have high scores for execution but to lag in terms of the adoption levels and vision needed for leadership. Challengers normally show strong corporate viability and financial stability, and demonstrate strong customer support. However, they lack some features to support the new trends in the operational DBMS market, such as support for interaction and observation data in transactions, and a roadmap for moving toward multimodel DBMS capabilities. Although they may be lacking in relation to some of the market's innovative concepts, Challengers offer stability, simplicity of installation and support, and strong performance. As with the Niche Players, Gartner considers support for only a limited number of data types and hardware models as evidence of limited vision.

Visionaries

Visionaries take a forward-thinking approach to managing the hardware, software and end-user aspects of an operational DBMS environment. Visionaries typically have innovative ideas for new functionality and advanced use of new hardware. They have the requisite number of production customers, but lack the market momentum of Leaders. In this market, Visionaries are often young, small and innovative vendors with great new ideas that are spurring on the more mature vendors and the market in general.

Niche Players

Niche Players generally deliver a highly specialized product with limited market appeal. Frequently, a Niche Player provides an exceptional operational DBMS product, but is isolated or limited to a specific end-user community, region or industry. Although the solution itself may not have limitations, adoption is limited. Niche Players contains vendors with operational DBMSs that:

- Lack a strong or a large customer base
- Lack the breadth of functionality of those of Leaders
- Lack general customer acceptance or the proven functionality to move beyond niche status

Context

This Magic Quadrant deals with the key information management capabilities for operational processing. It should therefore interest anyone involved in defining, purchasing, building or managing a transaction-processing environment — notably, CIOs, CTOs, infrastructure managers,

database and application architects, database administrators and IT purchasing managers.

At one time, Gartner viewed the online transaction processing (OLTP) DBMS market as very mature, with few new entrants to challenge the status quo. However, in recent years, the market has changed rapidly, which prompted our redefinition of it in 2013 as the operational DBMS market (see "The OLTP DBMS Market Becomes the Operational DBMS Market"). The introduction of NoSQL DBMSs and Hadoop supporting the use of additional data types and "unstructured data" in transactions, and the pervasive implementation of in-memory computing, have been transformational. Many organizations are beginning to use these new DBMS engines to incorporate analytics directly into transactional streams for HTAP and to deploy other new use cases, such as global scalability for Web applications and emerging IoT applications involving event processing (see "Match Use Cases and Capabilities for Operational DBMSs").

This year, we have added to the Magic Quadrant two cloud-only vendors (AWS and Redis Labs), two relatively small vendors that now meet the inclusion criteria (MemSQL and Orient Technologies), and three others (Fujitsu, Hortonworks and Percona). Even with these seven additions, the vendors are more spread out throughout the Magic Quadrant, as the new capabilities, and the ability to deliver them, are unevenly distributed. Even the Leaders have spread out, despite their number having again increased, primarily due to the addition of dbPaaS-only vendors. We believe that dbPaaS is ready for use throughout the applications present in end-user organizations.

Although most vendors are gaining multimodel capabilities (see "The Rise of Polyglot Persistence Demands Your Consideration"), as yet most support only two or three models (which include relational, key-value, graph, table-style and document-style), and only one or two data types (such as structured [relational], unstructured, XML, interaction and observation). Hence, although many vendors — typically the smaller ones — remain below the Magic Quadrant's midline (due to their limitations in terms of execution), they have spread to the right (due to their growing vision).

As recently as 2013, we considered in-memory capability as an indicator of a vendor's vision. Now, just two years later, it has not only become an aspect of a vendor's execution but is virtually a basic requirement to compete successfully in this market — vendors that have not at least begun to implement it are lagging behind. We do not believe that all visionary trends — for example, the development of multimodel capabilities — will become execution factors so quickly.

At the same time as vendors both traditional and new offer a wider range of functions, the operational DBMS market will become more homogeneous and commoditized (see "IT Market Clock for Database Management Systems, 2015"). Consolidation will reduce the number of vendors.

Many of the newer players in this market are beginning their transitions from sub-$50-million-per-year business models to business models designed to generate hundreds of millions of dollars (or more) each year — transitions for which they will need funds. Changes at the executive level, geographical expansion and a move to vertical-market offerings and industry-targeted selling have characterized the journeys of several of this year's rising stars, the first of these developments often being prompted by investors who expect a more experienced and professional executive team.

Our analysis in this Magic Quadrant is based on information gathered from interactions with Gartner clients over the past 12 months and our survey of the vendors' reference customers, conducted during July 2015. We also considered earlier information and any news about vendors' products, customers and finances that came to light during the time frame of our analysis.

Market Overview

The OLTP DBMS market, from which the operational DBMS market evolved, was very mature in the early years of the 21st century. However, as Internet usage and availability grew, so did the applications necessary to support the associated growth in infrastructure. Consequently, over the past five years, many new vendors have entered this market with products to support the specialized applications required by a new and global business arena.

Many drivers of innovation are widely influential. New forms of data have become available from connected (IoT) devices, such as smart meter data and machine or device data; we call this "observation data." Pervasive use of personal devices and social media has also become a source of social- and business-related data; we call this "interaction data."

Best-fit engineering adoption is driving the use of alternative data stores to manage these new forms of data: while 91% of the organizations we surveyed said they use RDBMSs, 45% are using key-value stores, 38% document-style DBMSs, 22% table-style DBMSs and 16% graph-style DBMSs.

The new forms of data must now be used not only for analytics, but also within transactions. The associated growth of HTAP is evident from our survey results: 50% of the survey respondents identified HTAP as a use case, while 20% identified it as the primary use case.

Consistency requirements are also shifting — even for transactional use cases, only 69% of respondents identified ACID requirements as applicable, with 16% opting for tunable consistency and 14% for eventual consistency. For the distributed variable data use case, one-third of the respondents considered automatic data distribution a requirement, as "self-administered" sharding and distribution strategies begin to be seen as onerous and fragile. Almost one-third (31%) of those respondents also require online schema change, which is another indication of the emerging changes in expectations.

The cloud is being widely adopted as a delivery platform in the operational DBMS market. Its impact has been not just to spawn a substantial number of new players who have grown into contenders in the market; it has also become a vector for the market vision of large established players, separating them in terms of their recognition of the impact that cloud-based and hybrid deployment will have on customers, product architecture and pricing. Over the next few years, we expect most vendors to offer cloud versions of their DBMS products. These will range from simple offerings of support for IaaS (and IaaS+) and cloud hosting, to full cloud DBMS platforms with elasticity and multitenant capabilities (dbPaaS). As the operational DBMS market matures, cloud deployment — and especially hybrid deployment — has become important evaluation criterion, as it offers users an additional platform choice with scalability and HA.

Standards have gone bimodal (see "Bimodal IT: How to Be Digitally Agile Without Making a Mess"): 26% of the survey respondents have established a bimodal approach to operational DBMS standards, enforcing Mode 1 and permitting Mode 2 experiments; 29% enforce a Mode 1

approach to standards (an additional 14% said they adhere to, but do not enforce, a Mode 1-only approach); and 21% enforce no standards at all. Separately, 70% of respondents identified the DBMS for which they were providing a reference as their operational DBMS standard.

Clients often expect that doing business with new vendors can be challenging because of these vendors' relative immaturity. Sometimes that is true — Hortonworks, for example, received the lowest survey rating for customers' experience of doing business with it. But maturity is no guarantee of smoothness in this regard; a very mature megavendor, SAP, received the second-lowest score. In fact, three of the top four vendors by revenue (IBM, Oracle and SAP) fell below the median on this question. Newer vendors, including Redis Labs, FairCom, MapR and MongoDB, received the highest ratings in this regard. Nonetheless, overall, 58% of the respondents expect to do more business with their existing vendor within the next 12 months.

Changes to pricing and licensing are also having a major impact on this market, partly due to the rise of open-source DBMSs. Such software is key to several of the vendors discussed in this Magic Quadrant, either because it forms the basis of their business model, or because it is causing a transformation in their business model. No commercial vendor can ignore the impact of open-source DBMSs — most already offer a free version of their flagship product or are adding one to their portfolio (see "The State of Open-Source RDBMSs, 2015"). The new open-source players are attracting customers for many of the new use cases. This development is flattening the growth of some of the megavendors who still dominate the revenue numbers but whose revenue models are increasingly based on maintenance business, rather than sales of new licenses. Users are increasingly asking, with justification, whether their new use cases necessitate the high list prices and vendor "lock-in" that characterizes their legacy portfolio. In general, they consider they are getting value for money — 86% rate their vendor above the midpoint in this regard — but some megavendors, notably Oracle and SAP, come at or near the bottom on this metric. This question, like those about the use of the cloud, is increasingly accompanied by questions about the feasibility of migration.

Note 1
Definition of an Operational DBMS Workload

For the purposes of this evaluation, the workloads we expect to be managed by an operational DBMS include batch/bulk loading, real-time or continuous data loading, concurrent online and Web-based new and update transactions, operational reporting, and management of externally distributed processes such as "look-aside" queries. Operational DBMS products must provide the ability to prioritize these multiple workloads to ensure SLAs are met when they operate concurrently.

Note 2
Definition of a DBMS Appliance

Gartner defines a DBMS appliance as a preinstalled DBMS sold on server hardware specifically configured and balanced for optimized performance with an included storage subsystem. In addition, a single point of contact for support of the appliance is available from the vendor.

Note 3
Survey of Vendors' Reference Customers

As part of the Magic Quadrant research process, we sought the views of vendors' reference customers — details of whom were supplied by the vendors — via an online survey conducted in July 2015. The survey included requests for feedback about vendors' maturity (for example, typical use cases, provision of innovation, responsiveness to new requests, TCO and pricing) and product capabilities (for example, HA/DR capabilities, support for high-speed ingestion of data, performance, support for multiple data types, and problems encountered with the products). Over 500 organizations, representing all the featured vendors' customers, responded to the survey, with an average of 14 per vendor.

The respondents were generally pleased with their vendors and products, but gave relatively low marks in some areas, which we detail in the analysis of each vendor. Some of the low scores might reflect historical problems, as not all organizations are on the latest product versions.

Note 4
Gartner's Client Inquiry Service Data

Gartner maintains an extensive database of information about all inquiries to our client inquiry service. Our information management team received over 5,000 inquiries during the Magic Quadrant research period of July 2014 to July 2015, of which over 500 were specifically about DBMSs. We used the sentiments apparent from these inquiries to formulate the opinions expressed in this Magic Quadrant.

Evaluation Criteria Definitions

Ability to Execute

Product/Service: Core goods and services offered by the vendor for the defined market. This includes current product/service capabilities, quality, feature sets, skills and so on, whether offered natively or through OEM agreements/partnerships as defined in the market definition and detailed in the subcriteria.

Overall Viability: Viability includes an assessment of the overall organization's financial health, the financial and practical success of the business unit, and the likelihood that the individual business unit will continue investing in the product, will continue offering the product and will advance the state of the art within the organization's portfolio of products.

Sales Execution/Pricing: The vendor's capabilities in all presales activities and the structure that supports them. This includes deal management, pricing and negotiation, presales support, and the overall effectiveness of the sales channel.

Market Responsiveness/Record: Ability to respond, change direction, be flexible and achieve competitive success as opportunities develop, competitors act, customer needs evolve and market dynamics change. This criterion also considers the vendor's history of responsiveness.

Marketing Execution: The clarity, quality, creativity and efficacy of programs designed to deliver the organization's message to influence the market, promote the brand and business, increase awareness of the products, and establish a positive identification with the product/brand and organization in the minds of buyers. This "mind share" can be driven by a combination of publicity, promotional initiatives, thought leadership, word of mouth and sales activities.

Customer Experience: Relationships, products and services/programs that enable clients to be successful with the products evaluated. Specifically, this includes the ways customers receive technical support or account support. This can also include ancillary tools, customer support programs (and the quality thereof), availability of user groups, service-level agreements and so on.

Operations: The ability of the organization to meet its goals and commitments. Factors include the quality of the organizational structure, including skills, experiences, programs, systems and other vehicles that enable the organization to operate effectively and efficiently on an ongoing basis.

Completeness of Vision

Market Understanding: Ability of the vendor to understand buyers' wants and needs and to translate those into products and services. Vendors that show the highest degree of vision listen to and understand buyers' wants and needs, and can shape or enhance those with their added vision.

Marketing Strategy: A clear, differentiated set of messages consistently communicated throughout the organization and externalized through the website, advertising, customer programs and positioning statements.

Sales Strategy: The strategy for selling products that uses the appropriate network of direct and indirect sales, marketing, service, and communication affiliates that extend the scope and depth of market reach, skills, expertise, technologies, services and the customer base.

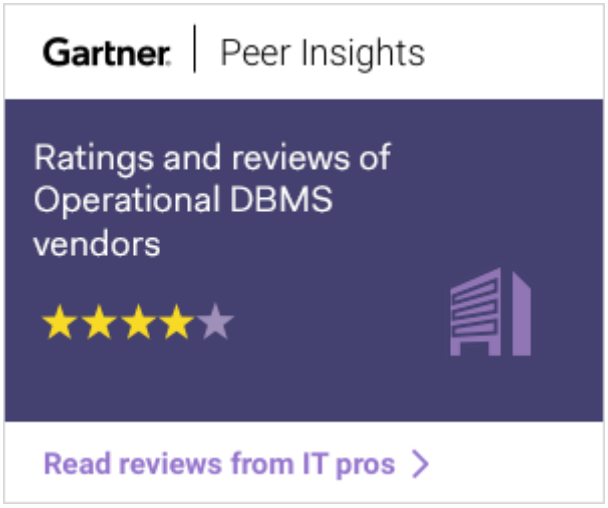
Offering (Product) Strategy: The vendor's approach to product development and delivery that emphasizes differentiation, functionality, methodology and feature sets as they map to current and future requirements.

Business Model: The soundness and logic of the vendor's underlying business proposition.

Vertical/Industry Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of individual market segments, including vertical markets.

Innovation: Direct, related, complementary and synergistic layouts of resources, expertise or capital for investment, consolidation, defensive or pre-emptive purposes.

Geographic Strategy: The vendor's strategy to direct resources, skills and offerings to meet the specific needs of geographies outside the "home" or native geography, either directly or through partners, channels and subsidiaries as appropriate for that geography and market.



(http://gtnr.it/MQR-OpDBMS)
