

EXECUTIVE SUMMARY

Application servers are proliferating, the number of end users is expanding rapidly, and data volumes and types are growing impressively as part of today's increasingly digital organizations.

However, the performance of database systems is struggling to keep pace—in fact, databases are hampered by reliance on disk based storage, a technology that has been in place for more than two decades. Even with the addition of memory caches and solid-state drives, the model of relying on repeated access to the permanent information storage devices is still a bottleneck in capitalizing on today's "Big Data."

Along with the sprawl of servers, users, and data, the time required to implement a data warehouse, re-model an existing one, add indexes, or add new aggregates, is dampening business agility. Data administrators are struggling to find ways to load data more frequently into their data warehouses and to provide real-time access to data in operational systems without impairing the performance of those mission-critical systems.

Enter in-memory technologies, which offer a way to dramatically speed up repetitive access and analyze information, accomplished by loading complete data sets into computers' random access memory. In-memory technologies not only can increase the speed of data processing by orders of magnitude, but they also can facilitate program changes to increase the freshness of data, as well as the cost-effectiveness of data systems.

There are a raft of applications that in-memory technology makes economically feasible including: retailers delivering real-time personalized offers based upon purchase history and social data, financial firms supporting up-to-the-millisecond commodities trading, scientific firms conducting simulations, and healthcare providers accelerating medical testing.

These are some of the findings of a new survey of 323 data managers and professionals who are part of the Independent Oracle Users Group. The survey was underwritten by SAP Corporation and conducted by Unisphere Research, a division of Information Today, Inc. The survey finds that while organizations are still in the early stages of in-memory adoption, most data executives and professionals are expressing considerable interest in adopting this new technology. Close to one-third of organizations in the survey already have in-memory databases and tools deployed within their enterprises, and they report advantages such as real-time operational reporting, accelerating existing data warehouse environments, and managing and handling unstructured data. Another one-third are considering in-memory technologies for their data needs.

Key highlights and findings from the survey, which explores opportunities with in-memory technologies, include the following:

- Today's data warehouse environments are not keeping up with the explosive growth of data volume (or "Big Data") and the demand for real-time analytics. Fewer than one out of 10 data warehouse sites in the survey, for example, can deliver analysis in what respondents would consider a real-time timeframe. Overall, existing database and data warehouse environments are time-consuming for both administrators and end users.
- Nearly 75% of respondents believe that in-memory technology is important to enabling their organization to remain competitive in the future. Yet, almost as many also indicate they lack the in-memory skills to deliver even current business requirements.
- In-memory is most often currently deployed to augment or accelerate existing data environments. The most frequently cited use cases of in-memory technology are for selective acceleration of analytics through replication of data from their data warehouses (45%), and within data marts that complement data warehouse environments (39%). Future areas of opportunities for use of in-memory technology commonly cited include real-time operational reporting and accelerating or complementing current data warehouse environments.
- Real-time/acceleration of analytics is the most recognized benefit of in-memory technology, especially as a means to enhance existing systems with this capability—rather than replace components of the existing IT landscape.

Survey respondents hold a variety of job roles and represent a wide range of organization types and sizes and industry verticals. The largest segment (43%) holds the title of database administrator, followed by that of director or manager. Forty-one percent work for very large organizations that draw more than \$1 billion a year in revenues. By industry sector, the survey covers more than 25 industry groups, led by high-tech firms, professional services firms, education and government agencies. Eighty-six percent are based in North America. (See Figures 25–28 at the end of this report for more detailed demographic information on job titles, company sizes, and industry groups.)

To enable in-memory databases to meet the burgeoning requirements for availability in fast-growing and increasingly complex Big Data environments, IT and data executives need to review their current IT landscape architecture and determine what can be enhanced with in-memory approaches, get business buy-in and support, and provide for end user training—and inspiration.

On the following pages are the results of this latest exploration of the emerging world of in-memory database technologies.