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The Real-Time Enterprise: A Path to Business Transformation

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The real-time enterprise, characterized by information-driven, online business processes, demands a capacity to respond in ever shorter time frames. With the flattening of organizational hierarchies, real-time decision making is demanded of more managers and knowledge workers than ever before. Yet organizations struggle with meeting this real-time requirement, as information delay remains a persistent problem. As a result, decision makers are forced to rely on stale or insufficient data. This limitation can impact the quality of business decisions, resulting in suboptimal business processes. In addition, the lack of the right information at the right time may cause the business to miss opportunities to define new information-driven products and services. But it doesn't have to be this way.

The following questions were posed by SAP to Henry Morris, senior vice president for IDC's Worldwide Software, Services, and Sales and Marketing Executive Advisory research groups, on behalf of SAP's customers.

Q. What is a "real-time enterprise," and why is it important?

A. The real-time enterprise is an organization committed to continually monitoring events that could signal change — in sufficient time for the business to respond. The shorthand for this is "predict and act." At the limit, the decision on how to respond can happen in near real time. As an example, consider the marketing function at a retailer. There was a time when a retailer mailed a physical catalogue once a season to its customers. Then the cycle from content creation, to delivery of offers, to customer response could last many weeks. In such an environment, there was no need for real-time information. But now a retailer with online operations would need to be able to make a decision on how to respond based on near-real-time events — including a transaction that occurred seconds ago.

This dramatically shortened decision cycle puts pressure on marketing professionals. Can they get relevant information in time to act? Do they have the capacity to respond intelligently in near real time? Can they shift from "gut-based" to "fact-based" decision making, acquiring what IDC calls an "analytic orientation"? The importance of this ability can be summed up in a single phrase: business transformation. Access to the right information at the right time is key to delivering new information-enabled products and services. For example, a manufacturer could provide a new service to its customers where it monitors the performance of its products in real time, then sending an alert when maintenance is required. Or an insurer can analyze real-time information on a customer's driving behavior, pricing the policy to reflect the individualized record. Such a data-driven product or service can have a transformative effect on business processes, making them more dynamic. It can actually change the business-customer relationship, enabling the business to deliver more value.

Q. Are business systems currently serving the needs of real-time enterprises?

A. In a word, no. IDC research shows that information delay is rampant throughout the business world. A recent IDC survey indicated that users face substantial waiting periods in moving data from transactional to analytical databases. The survey asked 407 IT manager respondents, "On average, what is the estimated time to process the data and make it available for analysis by the business user?" What we received were statistically significant responses in key lines of business (LOBs) such as finance, sales, marketing, customer service, manufacturing, supply chain and logistics, and R&D.

For years, separate platforms for transactions and analytics have been the accepted approach to ensure good performance for each area, given the different requirements for capturing data versus analyzing data. In practice, however, the requirement to transfer data between the two platforms underlying the two types of systems causes information delays. Further, it reduces the ability to connect insight to action because of a disconnect from analytics to source data. This leaves enterprises at risk.

Data movement from transactional to analytical systems — which have historically been kept separate — required more than a day in over 50% of cases. Some LOBs required more than two days, and a large percentage in each case indicated that intervals of a week to 10 days aren't uncommon. It's hard to imagine any nimbleness in business execution with such long delays between the setting of transactional data and the time it is available for analysis. By the time users analyze and determine a course of action, that course of action may be irrelevant.

Q. What would be a better way to meet the system needs of a real-time enterprise?

A. A real-time enterprise has the ability to couple transaction data, such as that gathered from an ERP or a CRM application, with analysis in real time, in a single, blended environment. This ability lets managers glean live insight from a fast-breaking situation. Rather than using separate transactional and analytical applications built on separate platforms, a single data management environment for both systems of record and systems of decision lets transactional and analytical data be managed together. This eliminates the delay caused by the batch transfer of data between separately platformed transactional and analytic systems for operational reporting and analysis.

Assuming good performance can be achieved for both systems of record and systems of decision on a single platform, a real-time enterprise can generate queries, reports, and visualizations for decisions makers not in days or hours, but in seconds. The system must support large amounts of relevant facts and be able to bring those facts to bear immediately upon demand.

Q. Is such an approach feasible? And if so, why now?

A. The speed of decision making can be accelerated to real time by merging traditionally separate transactional and analytical databases into a single database environment. However, this hasn't been technically feasible — until now.

The reason this problem can be solved now is that, because of the dramatic increase in processor power, fall in memory prices, and commonplace support for 64-bit memory systems, the relational database management system world is moving rapidly toward memory-based databases. Such databases treat main memory, rather than disk, as the home for the data they manage. Some memory-based databases swap the data to compressed disk spaces, but others manage the data entirely in memory.

In-memory databases offer key advantages over disk-based relational databases. For one thing, they are much faster. They are also more flexible, handling schema changes in minutes, whereas disk-based systems require days and sometimes weeks to make such changes because the data needs to be restructured on disk. This is important because businesses frequently need to make changes to the kinds of data they process and analyze. However, they are usually constrained by their databases' inability to support such changes in a timely manner.

Q. What are the benefits of in-memory database technology?

A. The IT managers IDC surveyed saw the benefits from in-memory databases centering on simplicity of management and ease in handling large and complex data tasks. The top 3 improvements that IT managers expected from in-memory databases were: 1) better utilization of IT staff, 2) improved management of Big Data, and 3) simplification of the IT infrastructure.

On the business side, an in-memory database offers a technology foundation for accomplishing the kind of unified data platform that was impossible in the past. Such a platform promises to yield the following business benefits:

- Faster access to real-time information
- Faster simulation, planning, and analysis
- Detailed access to granular information
- More contextual information
- Less dependency on IT for business users

The biggest benefit cited is flexibility. Knowledge workers must be able to ask any question that can be supported by the data that was captured in business operations. This enables the improvement of decision making and the exploration of new business directions. The system then must generate the answer just in time for an actionable response. Too often, business professionals only can ask questions that were anticipated by IT — supported by aggregated data structures built by IT to work around performance issues for querying and reporting.

Q. What are the next steps organizations should take in aligning business and IT professionals in meeting the needs of the real-time enterprise?

A. First, you should examine the impact that information delay has on your organization. Look at your business systems, especially the data-intensive systems, and consider how closely they are operationally interrelated and interdependent. Are they managed completely separately and coordinated only through extensive, inefficient, and often labor-intensive processes?

Then imagine what your organization would look like if you could transact business and simultaneously analyze results — making adjustments on the fly. What if you could modify business processes, and even automate business decisions, based on the actual facts of the moment rather than make decisions later based on data that takes hours or even days to collect and distribute? Consider operational reporting and planning as two areas to be transformed via a unified platform approach. And think about new products and services that could be delivered that incorporate the analysis.

Finally, you should seriously evaluate the benefits of a unified in-memory platform to drive business processes, combining both transactions and analysis in real time. For too long, organizations have formed their expectations for business process integration and informed decision making based on the limitations of their existing IT systems. It is time now to demand that those systems apply the full potential of technology to transform the business.

ABOUT THIS ANALYST

Henry Morris is the senior vice president for IDC's Worldwide Software, Services, and Sales and Marketing Executive Advisory research groups. Dr. Morris is also the executive lead for IDC's worldwide Big Data research initiative. Dr. Morris started the Analytics and Data Warehousing research service at IDC and coined the term "analytic applications" in 1997 to focus on the value of analytics in specific horizontal business and industry processes.

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