

DATABASE

TRENDS AND APPLICATIONS

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What the SOA Revolution Means for Data

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A number of new technologies are shaping and influencing the structure of tomorrow's real-time enterprise IT infrastructure. SOA is one of the key drivers. By definition, SOA is an architectural model that allows an enterprise to make its applications and resources, such as databases, available as "services" that can be called upon when necessary. SOA leverages standard mechanisms, such as the extensible Markup Language (XML), to simplify the process of exchanging data. Increasingly, SOA and Web services permeate the infrastructure of enterprise IT environments - where they are commonly used to resolve integration issues erected by the distributed silos of departments, divisions and locations - in addition to providing support for the B2B business models that are challenged to deliver services outside the firewall.

In all of these scenarios, SOA is driving the need for collecting, maintaining and retrieving large volumes of real-time data from high performance databases. In addition to transaction-related data, service/application performance data and compliance data are imposing stronger requirements for databases. The data typically resides in XML or XML schemas providing the simplest means for interoperability between applications.

As more and more people are conducting transactions online - for commerce, research, communications - it is apparent that the quantity of archived data is growing exponentially. This trend not only requires that databases scale to meet the growing volume of data, but also expects those databases to deliver on increasingly fast response

times. These seemingly opposing forces are driving today's new SOA business requirements.

When the volume of the data collected increases, so do the complexities of accessing and retrieving that data. SOA models impose real-time, on-demand access requirements for services as well as information. Inside the walls of the enterprise and beyond, service response time commitments have been intrinsically made to the end user. The ability of a database to meet those requirements ultimately determines user satisfaction and customer retention and loyalty.

Because of the criticality of databases in SOA models, monitoring them is vital to the service infrastructure.

Databases' New Role

Historically, databases have been viewed as a data store - a repository where information is placed to be used later. This common understanding of the off-line model is in sharp contrast to the role that databases are being required to perform in support of today's SOA environments.

Along with the recognition that databases sit squarely in the critical path of delivering the user experience comes a renewed effort to organize databases in a manner that better meets SOA requirements. This is why monitoring database applications to ensure their availability, reliability and performance

is critical to the delivery of the service.

For example, in the financial services industry, brokers routinely use online trading to execute their trades. Their ability to leverage and adopt new technology to execute trades quickly is crucial to increasing customer loyalty and competitive advantage. Execution of these trades requires an infrastructure that not only handles regulatory guidelines but also permits the trader to act with speed and accuracy to take advantage of current market conditions.

In this scenario, the SOA model not only requires the storage of dynamic, real-time data - including time-stamps, execution history and transaction information for the hundreds of thousands of trades that are executed every day - but also requires the database to scale to meet this high volume of transaction execution. Furthermore, all of the execution data has to be maintained to meet compliance and reporting requirements and to document the fact that the financial service provider is able to deliver on the service expected by the client. Monitoring these transactions is critical to ensure peak performance of the database.

Many Scenarios

Consider this. When shopping for popular holiday gifts, users have their choice of a multitude of Web sites. They visit one and if they can't find the exact item they want, they try another one. Finally, they locate the must-have gift at a seemingly acceptable price and attempt to place their order.

First seconds, then seemingly minutes go by with no response. Eventually, users abandon their shopping cart in favor of a site which offers the same product at a higher price but

delivers an instantaneous response to their order.

Response time is often cited as the single most important reason for shopping cart abandonment, which in turn leads to lost revenue and reduced customer retention. Obviously, customers who can quickly find and buy what they want will likely return, while those who have a bad experience will take their business elsewhere.

In the world of online transactions, the user experience is critical. So much so that, for many business-to-consumer companies, the quality of the user experience can be a key differentiator leading to competitive advantage and profitability.

In the case of Internet service providers, software-as-a-service companies, rich content providers and online gaming companies, the quality of the user experience is even more important. It's all they sell!

Unlike legacy databases, new databases must be able to scale dynamically because there will be hundreds of peaks and valleys within any utilization period. The ability of the database to handle those peaks and deliver the same response time in all scenarios is essential. Meeting those service level expectations will require monitoring solutions that provide true end-to-end visi-

bility from the user session all the way to the database.

Enterprise Implications

Even in internal business environments, the risks and opportunities loom similarly large and can spell the difference between the success and failure of a project. Global organizations with huge infrastructures have to make near real-time decisions, sometimes choosing suppliers or making other business-critical choices based on a company's position in the market at any given point in time.

This real-time decision-making has become increasingly vital for any organization. For instance, a consumer product company with a fast, scalable database can monitor brand movement on the retail floor and thus coordinate manufacturing and distribution efforts for a just-in-time delivery.

While data is being collected in real-time, enterprise IT must continuously monitor application queries to the database and optimize the database performance for the end-user who is simultaneously browsing for market intelligence and brand movement patterns, trying to understand the buyer behavior at the retail store level.

In this context of IT management, the database must be able to scale to the high volume of data that IT manage-

ment software produces plus have the ability to query the performance database and react quickly to take correct action or meet end-user requirements. To ensure service level promises are being kept, the performance of the database must be monitored constantly and IT must be alerted to head off potential problems.

Conclusion

Organizations are powered by information. Yet they often struggle with the ability to easily, securely and cost-effectively access that data in real-time - whenever and wherever it's needed.

Ultimately, the companies who pay attention to the critical role that databases play in their SOA environments will reap the rewards of greater responsiveness and better decision-making capabilities to gain a stronger competitive advantage. Because of the criticality of databases in SOA models, monitoring them is not only necessary but vital to ensure sustainable performance of the service infrastructure as a whole.

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