MANAGING THE PERFORMANCE OF COMPLEX ORACLE APPLICATION ENVIRONMENTS

INTRODUCTION

Organizations require Enterprise Resource Planning assets like Oracle Applications to deliver three strategic attributes to compete in the information-rich environment of today:

1 Fast response to end users

2 High data handling efficiency

3 Compelling business process differentiation

However, none of these attributes is inherently part of these off-the-shelf applications. User customizations, differences in usage profiles, and variations in data volumes lead to performance variances at different sites that frustrate business initiatives. A one-size-fits-all approach cannot correct these variations. Only the Information Technology group can make Enterprise Resource Planning assets perform in a way that maximizes end-user and organizational performance.

Standing in the way is a multi-tier environment in which components are highly partitioned, interdependent, and dynamic. Information Technology needs a solution like The Precise Application Performance Platform that creates an end-to-end view of performance across the enterprise. That type of view lets Information Technology pinpoint performance bottlenecks wherever they are and avoid the cyclical fray of finger pointing that inevitably occurs when different views and expertise are brought to bear on the slowdown. The result is an Information Technology group more aligned with the business and better able to contribute to the success of their end-users.

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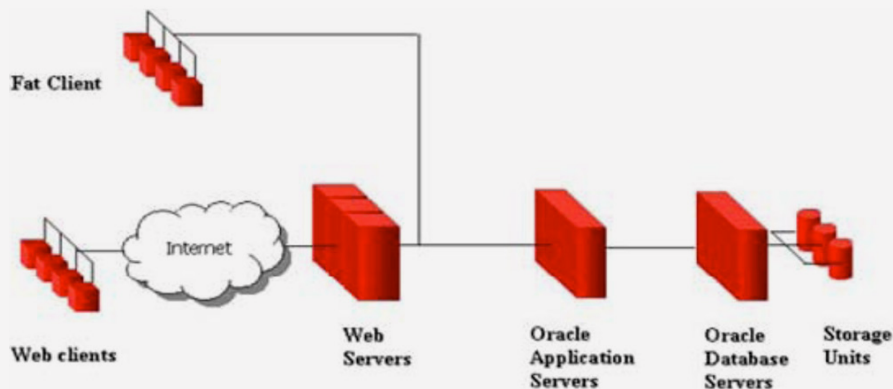
ORACLE APPLICATIONS

Ever since the early 1990s, organizations by the thousands have implemented Oracle Applications packaged solutions for human resources, financial accounting, logistics, production control, and other core business processes. They like the fact they do not have to build these applications from scratch and can get state-of-the-art features out of the box. Companies can offload software development to Enterprise Resource Planning vendors. Then, companies are left free to focus on core competencies. Many times, however, these advantages have come at the price of diminished performance. Products marketed to the largest number of buyers often do not match the unique needs of individual customers. Information Technology is analogous to buying a suit. Custom tailored suits fit better than suits purchased off the rack. However, they are more expensive and they require a longer wait. They also involve production risk, something that does not occur if the suit already exists. The same holds true for Enterprise Resource Planning software: each environment is different, with site-specific customizations, usage patterns, and data volumes. Those differences mean that the performance of an off the shelf or one-size-fits-all application might vary dramatically site-to-site or day-to-day.

However, must customers sacrifice application fit when they buy their Oracle Applications packages off the shelf? Specifically, must they sacrifice performance? While this has always been an Enterprise Resource Planning issue, Information Technology performance is one that customers can more easily live with before the Internet forever changed the Information Technology landscape. Back then, an application ran on either a desktop computer (that is, a fat client model) or a timeshare computer (that is, a thin client model). The database usually ran on the application server of the thin client, resulting in a two-tier architecture. Solutions with multiple tiers (such as Web servers, app servers, and firewalls) were minimal to nonexistent. If optimizing performance was a challenge (as Information Technology usually was) then at least there were only a few places for application glitches to hide.

THE TYPICAL ORACLE ENVIRONMENT

Currently, the typical transaction in an Oracle Applications environment may cross four or five tiers depending on the breadth and scope of the application. Each tier with its associated components adds complexity. However, even as the new environment has made problems harder to find and therefore fix, Information Technology has also made their impact more dramatic. That is because processes have become far more tightly synchronized with supply chain partners and customers. Outages of a duration of even a few moments are both embarrassing and costly.

No wonder companies now expect great performance from their off-the-shelf assets.

A typical Oracle Applications environment can span multiple tiers.

To continue to meet vertical market needs like Oracle Financials or Oracle Manufacturing, Oracle continues to add more functionality and more components that increase complexity. Couple that with a distributed, multi-tier environment and face some significant performance management challenges. In a recent Oracle white paper on performance tuning an Oracle Applications 11i environment the authors state, "The increasing breadth and depth of the applications technology stack means that adopting an end-to-end approach, addressing all system components, is becoming more and more demanding. However, the end-to-end approach is the only way to start investigating any complex issue that may have several contributing factors. Furthermore, in Oracle Applications, Information Technology is becoming harder to locate and resolve issues when working with each technology stack component in isolation.".

PERFORMANCE MANAGEMENT CHALLENGES

The challenge is to determine how one can achieve excellent performance in the complex environment of today with an application that still follows the model of one-size fits all. The answer to this question is important because of the strategic role information technology now occupies in the modern enterprise. Application performance has become strategic to the business, for three reasons:

The first reason is the growing numbers and importance of end users. More employees do more of the work of the organization on computers, and customers and trading partners are more likely to do business with the organization online. According to a Gartner Group study, businesses must compete on not only product availability, cost, and quality, but also on the quality of the information that they publish for consumption by collaborating partners. That means that if application response is inadequate and that compounds the damage. Not only will Information Technology directly affect production to a greater degree than in the past, but Information Technology is also much more likely to affect a customer or business relationship directly.

The second reason that application performance has become strategic is that the environment is generating much more data for the organization to collect, store, and analyze. Furthermore, those tasks are also getting harder thanks to the growing diversity of technologies, each of which has its data issues, which Enterprise Resource Planning must accommodate. One example is mobile applications. Those will push even more data at the enterprise and require faster processing speed. Moreover, as more data populates more places and updates with greater frequency, data synchronization will become much harder to do and much more important.

The third reason is that globalization is making innovation of business processes a key competitive advantage. That is particularly the case in mature markets where the business process itself has become the prime competitive differentiator. Businesses will pursue a best-of-breed approach to building the Information Technology infrastructures that implement these differentiating business processes.

Response to end users, data handling efficiency, and business process differentiation: these have become the three keys to business performance in the Internet era. That is what has changed to make the performance of the technology strategic. What has not changed is the standard set of design principles by which Enterprise Resource Planning vendors create technology. Specifically, those call for:

- Wide-ranging core functionality that can be customized to meet specific customer requirements
- Support for multiple platforms to accommodate heterogeneous computing environments of today
- Modular design to enable customers to mix and match the application modules they need to run their business
- Extensibility through third party or vendor-supplied development, query and reporting tools to enable enhancement and customization

Vendors recognize the need to tailor standard functionality through site-specific customizations, extensions, and selections of platforms and modules. However, vendors leave performance issues up to the enterprise and its Information Technology department. One way to boost performance is to replace or modify the Enterprise Resource Planning code so that Information Technology delivers the best end user response and data handling efficiency possible at each site. That, of course, is rarely practical. A more workable approach is to have the Information Technology group of the company optimize Enterprise Resource Planning performance after implementation.

TRADITIONAL PERFORMANCE TOOLS FAILED

Traditional Oracle Applications tools attempted, with limited success, to meet the performance management challenges of business. Since these tools adopted a stovepipe approach, they were limited in their ability to correlate performance between the different infrastructure components. Stove piped solutions force technical experts to spend an excessive amount of time correlating multiple metrics to pinpoint the cause of performance degradation versus utilizing a correlated solution that allows the root cause to escalate to the top. Compounding this issue, many of the data collection technologies deployed do not sample frequently enough (for example, once every 5 to 10 minutes). Nor do they gather sufficient information to perform meaningful analysis for the particular problematic time interval. When collecting data from each tier of the, adding a subject matter expert to the team further delays an appropriate solution due to indecision and communication issues among team members.

BLAMESTORMING

Even as traditional tools link various graphical user interfaces to create loosely integrated suites, Information Technology is still not enough to solve the problem. Information Technology only leads to more blamestorming (that is, a nonproductive, cyclical fray of finger pointing in which each department absolves itself of the blame for performance degradation, then points to another as the culprit). This blaming is because the metrics are not truly correlated due to the nature of the various collectors required to monitor each component individually. When Information Technology fails to pinpoint the sources of degradation, they reduce themselves to firefighting mode and to a shortsighted vision in which loss avoidance, rather than revenue generation becomes the goal.

The following performance questions must be answered to eliminate blamestorming and focus directly on the problems impacting the business:

- Which Oracle Applications User, Form, Report, Program, Request, Business Unit, and Location are being affected?
- What is the real end-user response time?
- What is the end-to-end transaction response time?
- How much time was spent in the Oracle Application server?
- How much time was spent in the Form server?
- How much time was spent in the Web server?
- How much time was spent in the Database server? Why?
- How much time was spent between the presentation and application layer?
- How much time was spent between the application layer and the database layer?
- What is the status of the concurrent managers?

A solution that answers these questions enables Information Technology Management to leverage their most valuable resource, their people, to solve performance problems and minimize the impact performance problems have on business performance. Performance management solutions should enable Information Technology to recognize the location of a performance problem immediately to deploy the appropriate subject matter expert fast. The right solution then provides the means for the specialist to focus quickly on the problem, isolate the root cause, and correct the situation.

Instead, they focus on specific infrastructure components, none of which matter to either end-users or management. All that matters to end-users is application response time. Likewise, with management, they only want to know key performance indicators (such as if end-users can do their jobs, if customers are satisfied with the online experience, and if the right parts are being ordered and delivered on time). The Information Technology organization must adopt a similar view to align themselves with end-users and management.

BRAINSTORMING OR BLAMESTORMING?

A recent television commercial shows people sitting around a conference table on a Sunday afternoon. A systems failure has just shut down the online business of the company. Rather than get to the root cause, people point fingers at other groups (such as, the Information Technology manager, the network provider, the server manufacturer, the software supplier), each of whom is responsible for a different technology stovepipe. What is missing here is an end-to-end view of the business across silos to see how the performance of each component affects everything else. That type of view might have exposed issues before they became failures, and allowed for preemptive action, and a much more pleasant Sunday.

THE PRECISE METHODOLOGY

The Precise Application Performance Platform for Oracle Applications leverages a systematic methodology that enables Information Technology staff to eliminate performance degradation before this impacts service. Once in place, the method delivers a more consistent and higher quality experience to users. Information Technology simplifies the complex task of finding and fixing performance degradation by tracking key performance indicators unique to the Oracle Applications environment. These unique, high-quality metrics are then used to fine-tune the application resulting in faster transactions and response times. The impact is an infrastructure that runs at peak efficiency and an Information Technology staff who focus on implementing Oracle Applications functionality rather than sustaining an inadequately configured infrastructure.

The solution of the Precise Application Performance Platform helps:

1. Identify the symptoms that can indicate a performance problem

2. Determine the problematic tier and application component

3. Drill down into the root cause of the problem

4. Identify the actions required to improve performance

5. And ensure the measures taken have achieved the desired goal

These combine to form a process that provides a systematic approach to finding and resolving all kinds of performance issues, both predictable and unforeseen.

THE PRECISE SOLUTION

The Solution of the Precise Application Performance Platform focuses on providing organizations with the ability to measure and monitor application performance end-to-end from the browser through the database right into the physical storage media. The Solution of the Precise Application Performance Platform provides an integrated solution for application performance management that focuses on identifying the service level experienced by the user and determine the end-to-end path contributions.

VIEW PERFORMANCE MANAGEMENT END-TO-END

The Solution of the Precise Application Performance Platform makes Information Technology very easy to look across entire applications and quickly identify performance bottlenecks. The Solution of the Precise Application Performance Platform provides a visual representation of the performance of each of Oracle Application tiers. This analysis empowers organizations (such as operations), to identify quickly performance hot spots by tier.

While this information lives in a common interface, the appropriate security and role-based user access controls have been put in place to make sure that people see only the information they are entitled to see. For example, a user from the operational support group may need to drill into a particular component tier to isolate a problem, while a user from production group need only need sufficient access to identify that a problem has occurred.

In this example, the application consists of the Web server, Oracle Application server, and Oracle Database server tiers.
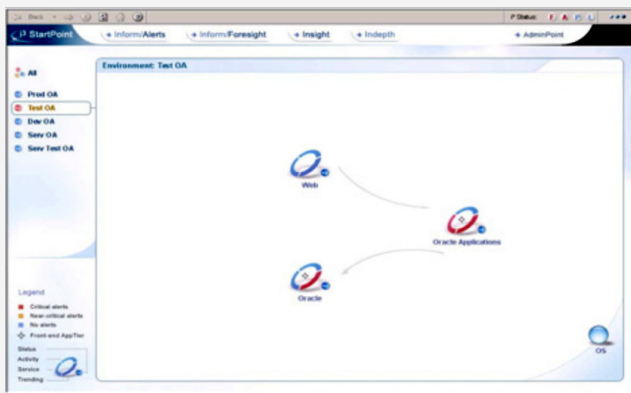
The user interface of the Precise Application Performance Platform showing an Oracle Applications environment.

DETECT PROBLEMS USING REAL-TIME ALERTS

Customers have the flexibility to establish performance management thresholds on the main metrics in each application tier. When exceeding limits, an alert is generated to ensure production and operations groups react quickly. Response time alerting by Oracle Applications Form, User, Report, and Application make this the most comprehensive and Oracle Applications specific performance solution available. The Solution of the Precise Application Performance Platform provides the ability to establish automatically performance baselines, thereby eliminating the need to set performance threshold metrics for all the different application tiers and their components.

PROACTIVE PROBLEM DETECTION

With The Precise Application Performance Platform Applications, application performance issues can be detected and corrected before they become a problem. Extensive reporting features make Information Technology easy to tune the performance of Oracle Applications Forms and Reports proactively. Information Technology organizations can run a set of standard or custom reports to isolate potential problems on any of the application tiers. These reports also provide a way to keep management and customers informed about application performance.

ISOLATE PERFORMANCE PROBLEMS BY TIER

Once an application performance problem is detected, The Solution of the Precise Application Performance Platform allows the performance team to drill into a view of performance across all tiers. This holistic perspective allows staff to begin investigating the problem by viewing key components and indicators, eliminating tiers and components that are not the problem. Drilling down into the Oracle Application tier, the Precise Application Performance Platform provides details about the actual Oracle Forms, Users, Applications, and Servers, including how much the Form Server of Oracle contributes to the service time of the form.

DRILL-DOWN INTO THE JAVA ENTERPRISE EDITION TIER

The Solution of the Precise Application Performance Platform also provides detailed information about the Oracle servlets that are running in the Java Virtual Machine. Details about the top consuming Java objects (that is, Enterprise JavaBeans, Servlets, JavaServer Pages) and method-call level time contributions are easy to attribute back to individual transactions to allow Information Technology to assess the scope and impact of slow Java Enterprise Edition performance.
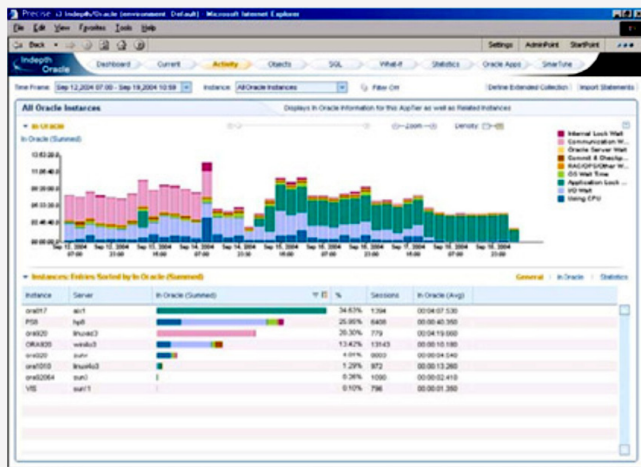
The Precise Application Performance Platform provides a high-level view of application and database performance.
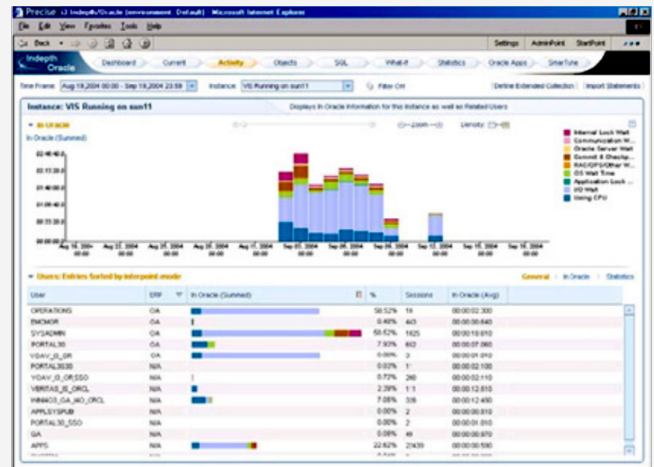
The Precise Application Performance Platform allows Information Technology administrators to see quickly and easily which users feel the impact.

BENEFITS OF THE PRECISE SOLUTION

The need to adopt a proven Application Performance Management solution has evolved from nice-to-have to an organizational imperative. Information Technology organizations fully recognize the need for network management and system management solutions. Today, given the complexity of Oracle, organizations must adopt a sustainable and supportable approach to application performance management. Application performance management must be viewed from an end-to-end perspective to be effective. The combination of The Solution of the Precise Application Performance Platform coupled with the methodology of the Precise Application Performance Platform provides a complete solution. The Precise Application Performance Platform makes Information Technology easy for Information Technology organizations to effectively manage and monitor the performance of their applications as a natural extension of their standard operational practices. With The Precise Application Performance Platform Applications, Information Technology organizations receive the following benefits:

- A clear understanding of actual application service levels as seen by all users at their desktops

- Holistic, correlated application performance metrics to eliminate blame-storming sessions

- Production safe software to provide a performance solution without becoming part of the problem

- Clear understanding of how application performance is affecting business revenue

- Corrective recommendations with supporting data to resolve slowdowns fast

- Reduction in total cost of ownership of Oracle Applications and hardware investments

SUMMARY

The packaged applications of Oracle represent a more challenging environment in which to conduct business. Conversely, business is more dependent than ever on enterprise applications for meeting customer expectations, achieving innovation, and creating competitive advantage. Conversely, the Information Technology infrastructure is inherently fractured with transactions taking place over multiple tiers, each of which can and perhaps should be customized to tune performance and differentiate the business. However, what works for businesses using Oracle Applications may not work for the Enterprise Resource Planning vendor looking to sell applications across a mass market with standardized features and functionality. That leaves Information Technology up to Information Technology organizations to optimize somehow performance after implementation. To do that, they must align themselves with the business, empower the end-user, and show support for the objectives of management. That is no easy task, especially given the technical challenges present. What Information Technology can do is employ solutions that provide a comprehensive end-to-end view of the enterprise, solutions that are easy to use, allow rapid assimilation of historical trends, and can pinpoint performance issues at any level even before problems occur. The Solution of the Precise Application Performance Platform addresses these challenges and simplifies the development and deployment of high-performance Oracle packaged applications. Using The Solution of the Precise Application Performance Platform helps companies manage the service level, contain the costs, maximize the efficiency of the operational investment, and improve the service levels experienced by the end users.

FINAL THOUGHTS

The Precise Application Performance Platform Applications is the first software offering in the industry that provides a way to capture quickly, efficiently, and unobtrusively the difficult to obtain browser-to-SQL application metrics. It presents these metrics in a manner that enables crisp communication, rapid proactive or reactive detection, correction, and verification throughout the application life cycle.

The Precise Application Performance Platform Applications sets a new milestone in packaged Application management. Performance Management by delivering a comprehensive integrated software solution that addresses the major service level challenges associated with the timely delivery of quality Web application services that the Information Technology organization needs. This solution:

- Focuses on the application end-user response time.

- Provides a view of the actual service levels as seen by all users at their desktop.

- Identifies the end-to-end path of the application.

- Presents end-to-end response time contributions.

- Isolates the hotspots from the browser to the SQL and the database.

- Determines root cause from the Oracle User, Form, Program, or Request to the underlying poorly performing SQL or systems configuration.

- Provides corrective action recommendations with supporting data.

- Detects and diagnoses the impact application slowdowns have on.

- Fits all phases of the application lifecycle (that is, Development, Quality Assurance, Stress Testing, Staging, and Production).

- Meets the detection, reporting, isolation and diagnostic needs of all organizations involved.

- Has a consistent way of presenting the service level information.

- Interfaces with and complements the existing infrastructure frameworks.

- Provides baselines and reports trends.

- Provides real-time deviation and trend-based alerts.

PRECISE

APPLICATION PERFORMANCE PLATFORM

- End-to-end transaction visibility quickly isolates issues anywhere in the stack
- Recommended corrective actions speed time to resolution
- Historical analysis and trending discovers potential issues before they occur
- Database stores contextual details to correlate transactions with business issues
- Scalable performance for mission-critical business processes
- Multi-platform support spans a diverse range of system clients

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