Ensuring End-User Performance for Siebel CRM

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PERFORMANCE ASSURANCE FOR SIEBEL CRM

The Siebel CRM application is a complex system comprised of multiple components, including a traditional Web-based front end, Siebel application and gateway servers, and one of multiple possible databases. As a result, application performance can be difficult to ensure prior to deployment with traditional test methods. Poor application performance can have any number of detrimental effects, including lost productivity, failed adoption, and decreased employee morale, any of which can and will result in impact to bottom-line performance.

Oracle Application Testing Suite (ATS) helps organizations measure the performance that Siebel CRM delivers to end users and enables them to isolate and remedy sources of potential performance bottlenecks. ATS enables the automation of Web business transactions and provides the ability to generate application load to accurately measure the performance that will be delivered in production. If and when bottlenecks are encountered, built-in system diagnostic tools enable efficient identification and resolution. The result is a Siebel application optimized for performance at go-live, leading to increased adoption and organizational efficiency.

THE CHALLENGES OF SIEBEL CRM PERFORMANCE TESTING

With the release of Siebel 7, Siebel introduced the Siebel Smart Web Architecture, a zero-footprint implementation that provides high levels of interactivity previously seen only in Windows desktop applications. The Siebel High Interactivity Client accomplishes this by separating data transfer from the user interface refreshes. The Siebel Smart Web Architecture was extended in release 7.7 to include a test API making Siebel the first CRM system to be designed for “testability” and enable test automation of Siebel CRM applications.

Siebel can run on multiple operating systems, including Windows and UNIX systems, and various databases. The application contains many server types, and each tier (Web Server, Gateway Server, and Enterprise Server) may actually consist of a set of clustered servers to manage performance. This multi-tier architecture provides additional flexibility, enabling users to customize the application for specific needs. However, this architecture results in an increase in testing complexity and more difficult performance bottleneck identification. Having a
Performance testing of the Siebel CRM solution requires an understanding not only of the Siebel Smart Web Architecture but also of the various constraints inherent in Siebel environments. Some of these constraints include the various business and database rules that transactions must adhere to. Siebel supports many business verticals and organizations with its Sales, CallCenter, Field Service and Finance modules. Most companies tailor their Siebel implementation to fit their particular business model. The rules around these modules range from data use and re-use to “consumable” business steps that cannot be repeated or do not allow for concurrency during testing. Therefore, it is vital that subject matter experts be engaged at the beginning of the test project and stay involved throughout the performance and tuning phase. Collaboration between these subject matter experts is critical to the success of the project.

Figure 1: Siebel CRM Architecture Overview

THE ORACLE APPLICATION TESTING SUITE

Built from the ground up to be the best-in-class solution for functional and performance testing of Web applications, the Oracle Application Testing Suite has been extended for testing of Siebel CRM. Features like Visual Scripting, integration with Siebel Test Automation, a collaboration-based Web interface, and
In addition, Oracle Functional Testing is used to create both functional test scripts and load test scripts, so users don’t have to learn multiple test tools with different scripting languages.

Built-in diagnostic tools differentiate ATS from the generic test automation and load testing tools prevalent in the marketplace.

**Visual Scripting**

The Oracle Application Testing Suite is unique in its Visual Scripting approach to both functional test automation and script creation for load testing. Scripts are created in the Oracle Functional Testing component of ATS by capturing user interactions with the system in real time, so there is no need for complicated programming or arcane domain expertise. In addition, Oracle Functional Testing is used to create both functional test scripts and load test scripts, so users don’t have to learn multiple test tools with different scripting languages. As a result of this approach, Application Testing Suite delivers the best time-to-value in functional test automation and performance testing. Additionally, with the integration of the Siebel Test Automation libraries, scripting against standard and highly customized Siebel CRM installs has been greatly simplified. The same record/playback approach that has been so effective when working with other Web applications has been extended for Siebel scripting against the Siebel High Interactivity Client.

![Figure 2: Siebel script recording in Oracle Functional Testing](image)

Creating working test scripts is typically one of the biggest challenges in load test automation. Load testing solutions automate user requests at the protocol level to simulate the application’s interactions with the back-end servers and generate scalable loads of hundreds or thousands of virtual users. For Web applications, these http-based protocol requests typically contain dynamic parameters to manage user session and state information that load test tools must account for and correlate in order to get their scripts working. Siebel applications are extremely
dynamic, given the complex business logic and extensive personalized functionality the applications employ. Manually correlating application requests and programming load tests scripts to get them working, which is difficult for most Web applications, is even more challenging for Siebel without in-depth knowledge of how Siebel applications work. As a result, most load test solutions on the market will not provide adequate capabilities for Siebel load testing.

Oracle Functional Testing, which is used for creating both load and functional test scripts, integrates with Siebel Test Automation’s Siebel Correlation Library to allow users to create performance testing scripts in minutes by recording real interactions with Siebel applications. Siebel Correlation Library automatically identifies dynamic Siebel request parameters and converts them into Oracle Load Testing script variables. This eliminates the need to identify dynamic parameters and correlate these requests manually, which results in a dramatic reduction in scripting time.

In the cases when out-of-the-box support is insufficient, the load testing scripts may be edited in the same scripting interface, using the Navigation Editor, without resorting to programming. This again enables the performance test team to spend less time scripting and more time testing and identifying and resolving performance issues.

Figure 3: Correlation of Siebel requests in Navigation Editor

Finally, in addition to the integration with Siebel correlation library, Oracle has enhanced script accuracy by including a set of core functions that are capable of validating any JavaScript alert message box definitions embedded in the server response during the load test. This out-of-the-box feature is unique to the Oracle Application Testing Suite and can only be matched by competitive solutions by applying highly customized programmed scripting techniques requiring very
specific solution expertise. It adds to the correlation extraction for every page, rather than reusing the values correlated during script creation, resulting in better default content validation and an additional layer of verification of correct application functionality under load.

**Collaborative Load Testing**

Testing and tuning the performance of Siebel CRM applications is a complex and iterative process. As with most load testing exercises, “breaking” the application and identifying performance failures is not the desired outcome; finding bottlenecks and tuning the application to maximize performance are. This is a difficult challenge and consequently testers, developers, architects, and others must work together to analyze load test results and tune the application. The most effective way to identify and resolve performance issues is through collaboration with these domain experts. A load test tool at its core simply applies load and takes performance measurements. The performance test team must find bottlenecks and resolve them. The key to successful collaboration during a performance test is having access to both real-time performance measurements and a team of domain experts to help analyze and identify bottlenecks. Oracle Load Test for Siebel provides such a platform.

![Collaborative Load Testing Process](image)

**Figure 4 – The collaborative load testing process**

The load test controller in the Oracle Application Testing Suite runs using a standard Java application server platform and is accessed via any standard Web browser. The benefits of this architecture are two-fold. First, the Web interface provides greater accessibility to both enable and encourage collaboration during performance testing. Test team participants are no longer limited to a single console with a single operator. Each domain expert involved in a performance test may view the test in progress and generate the reports that are specifically relevant to their area of expertise. This results in faster and more efficient identification of
performance bottlenecks during the test and more effective testing overall. Second, the platform is much more scalable than the standard desktop install, resulting in higher available processing power and throughput. This enables higher volumes of generated load without resorting to using multiple instances of the load controller. As a result, there is no need to correlate reports and concatenate data after the test, again enabling much greater testing efficiency and, as a result, better application performance.

Figure 5 – Web-enabled load testing interface

**Built-in Performance Diagnostics for Siebel**

Another feature of the Oracle Application Testing Suite important for performance testing of Siebel CRM is the built-in capability to measure the performance of the application components under test. This includes the ability to measure operating system and hardware metrics like CPU utilization and memory consumption, database performance information from Oracle or other databases, and middleware and application server performance metrics. The Siebel-specific capabilities include using the Virtual Agent monitoring to gather performance information from the Siebel Server Manager, SARM, or the SWSE Administration page. It should be noted that these monitoring capabilities are a part of the default product installation and do not carry any additional licensing costs – which is also unique in the marketplace.

With this additional level of monitoring, poorly performing components of the Siebel architecture can be quickly identified during a load test. Further, this data can be quickly correlated to the end-user response time measured during the test to fully understand the bottleneck impact on performance and allow the testing team to correctly prioritize optimization efforts. Finally, this and all other data is available through the Web interface as discussed earlier, and test team members at disparate locations may still take an active part in performance testing.
Monitoring the components of your Siebel environment during load testing is extremely important. These components include Siebel Servers, Web servers, Gateway name server, Reports Server, the database, load balancing, and any integrated external system or integration points. In addition, the infrastructure resources such as disks, CPUs, networks, database servers, and authentication and directory servers, also need to be monitored on each component in the Siebel environment, since they can potentially impact application operation and performance. Finally, metrics like memory usage (both physical and virtual), CPU utilization, available disk space, and overall network access, bandwidth, and traffic also need to be measured during the load test.

Siebel offers several interfaces for collecting provided health and availability metrics. ServerStats, a unique feature of Oracle Load Testing, can make use of the command-line program srvrmgr (Server Manager) to monitor the run-time status of the Siebel Enterprise Server, individual Siebel Servers, Component groups, Components, Server Tasks, and user sessions. Along with srvrmgr, Siebel generates log files to record data for each Siebel Server deployed as part of a Siebel Enterprise. Information contained in the Siebel Server component log files can indicate deadlocks reached or exceeded threshold values. ServerStats can gather all these metrics using a standard log file monitor. Deeper diagnostics provided by Siebel ARM (SARM) can also be accessed using a ServerStats profile.

Beyond Siebel specific KPIs, ServerStats can use system-level profiles to gather and measure the physical resources consumed by all components, particularly memory and CPU. As an example, system CPU utilization should be at or below 70% during the test, and the components should be able to accommodate temporary spikes, whether in the number of tasks running concurrently, the amount of memory being used, or the percentage of CPU usage. Monitoring values like these will help ensure that system capacity is being used effectively without overloading.

Figure 6 – Siebel CRM Diagnostics
**Integrated Functional and Regression Testing**

In addition to performance testing of Siebel CRM, Oracle Application Testing Suite provides an efficient and accurate way to automate Siebel functional and regression testing. The Oracle Functional Testing for Web Applications component of ATS provides a platform for both functional test automation and the creation of load test scripts. The Functional Testing Accelerator for Siebel then extends these capabilities by integrating with Siebel Test Automation to effectively support automation of Siebel’s rich client user interface components.

Test automation for Siebel CRM is a major challenge due to the rich nature of Siebel’s High-Interactivity (HI) user interface controls. Oracle Functional Testing integrates with Siebel Client Automation Services (CAS) to record and play back user interactions with these controls enabling users to create automated test scripts that execute real user transactions through the UI. Oracle Functional Testing also validates Siebel content during playback by providing custom test cases for these High Interactivity controls.

With Oracle Functional Testing for Siebel, users can effectively introduce automation into their functional test process for Siebel applications and reduce the need for manual testing. The core functionality in Oracle Functional Testing combined with integration of Siebel’s Test Automation’s CAS interface simplifies the scripting process and enables custom validation of Siebel application content during script playback. Oracle Functional Testing also enables automated testing at the Web Services level as an additional option. Leveraging these capabilities users can develop automated regression test suites to quickly validate key application functions.

**CONCLUSION**

The Oracle Application Testing Suite is a best-of-breed solution for the performance testing of Web-based applications. Its capabilities have been extended to provide unparalleled value for ensuring the performance of Siebel CRM applications through the integration of Siebel correlation libraries for quick and easy scripting, greater scripting accuracy and out-of-box validation. Its Web-based performance testing interface offers unmatched scalability and enables performance testing to become a collaborative activity. The built-in diagnostic capabilities deliver the ability to quickly and efficiently identify poorly performing Siebel infrastructure or application components. Finally, the integrated functional testing capabilities enable Siebel QA teams to leverage test automation and reduce the need for manual testing.

With these features and the focus on testing of Web-based applications in general and Siebel CRM in particular, the Application Testing Suite is the Oracle-preferred
and recommended solution for organizations looking to improve the performance of their Siebel CRM installations or any other business- and mission-critical applications deployed over the Web.