

Performance and Scalability
Benchmark: Siebel CRM Release 7
on Unisys ES7000 and ES2000
Servers and Microsoft SQL
Server 2000 (64-bit)

*An Oracle White Paper
Released April 2003*



Performance and Scalability Benchmark: Siebel CRM Release 7 on Unisys ES7000 and ES2000 Servers and Microsoft SQL Server 2000 (64-bit)

INTRODUCTION

This white paper describes the performance and scalability capabilities of Oracle's Siebel Customer Relationship Management (CRM) Applications Release 7. The benchmark comprised 30,000 concurrent users running Siebel CRM Release 7 on Unisys ES7000 and ES2000 servers with Microsoft SQL Server 2000 Enterprise Edition (64-bit). This information should be used as an aid for system planning and sizing to support business requirements.

Results Summary: 30,000-Active-Concurrent-User Benchmark ^{1 2}

Workload	Number of Users	Avg Operation Response Time (sec)	Business Transactions Throughput/hour	Projected Daily Transactions (BTT/hour x 8)
Sales / Service Call Center	20,000	0.295	121,425	971,403
PRM	4,000	0.185	27,619	220,950
eSales	3,000	0.207	17,157	137,257
eService	3,000	0.147	40,521	324,166
Totals	30,000	N/A	206,722	1,653,776

Workload	Business Transactions Throughput/hour	Projected Transactions Per Day (BTT/hr x 8)
Assignment Manager - Dynamic	37,694	301,552
EAI - HTTP Adapter	854,557	6,836,453
EAI - MQ Series Adapter	728,745	5,829,959
Workflow Manager	97,585	780,680

¹ This benchmark data is intended for general information purposes and not for use as a substitute for implementation-specific sizing or benchmarks.

² Actual results may vary, based on a broad range of implementation-specific factors, such as transaction mix, hardware platform, network parameters, and database size. Oracle does not warrant or guarantee that customers will obtain the same or similar results, even if they use the same or similar equipment and/or software applications. Oracle does not warrant, endorse, or guarantee any performance of any products, any results desired or achieved, or any statements made within this document.

Major Test Component	Version
Application	Siebel 7.0.3 Application Suite
Database	Microsoft SQL Server 2000 Enterprise Edition (64-bit)
Operating System	Microsoft Windows Server 2003 Datacenter, Windows 2000 Server
Hardware	Unisys ES7000 Orion 130, ES2041, ES2081

OVERVIEW

The Siebel CRM Release 7 Smart Web architecture introduces a revolutionary approach for deploying Web applications. It includes a Web-only solution with the interactivity customers have become accustomed to with client/server implementations. It does so by being highly scalable and very light on the network and Web servers, thereby allowing customers to leverage their existing network and Web-farm infrastructure.

The tests conducted in Oracle's Siebel Platform Sizing and Performance Program are designed to stress the Siebel CRM Release 7 architecture and to demonstrate that large customers can successfully deploy many thousands of concurrent users. The Siebel CRM Release 7 architecture features tested in this benchmark include

- **Smart Web Architecture**—Takes advantage of the latest Web browser technology to deliver a highly interactive experience. The interaction model, which is similar to Windows-based applications, also improves productivity. Utilization rates on the Web server are low, allowing customers to retain existing Web server infrastructure.
- **Smart Network Architecture**—Allows Siebel CRM Release 7 customers to leverage their existing network infrastructure by compressing and caching user interface components, so that browser/Web server interaction occurs only when the application requests data. This allows customers to avoid expensive network upgrades that can be necessary with competing products.
- **Smart Database Connection Pooling and Multiplexing**—Allows customers to scale their databases without the introduction of expensive and complex transaction-processing monitors.
- **Server Request Broker**—Provides for component-level load balancing across multiple Siebel servers without the expensive and complex administration of transaction-processing monitors.
- **Enterprise Application Integration (EAI)**—Allows customers to integrate their existing systems with Siebel CRM applications. With a relatively modest investment in equipment, customers can execute more than 12,000,000 integrated transactions during an eight-hour business day.

This test simulated a large corporation with 30,000 concurrent users across multiple functional requirements:

- **Siebel Call Center and Siebel Service**—Provides the most complete solution for enabling customer service and telesales representatives to provide superior customer support, generate customer loyalty, and increase revenues through cross-selling and up-selling.
- **Siebel Partner Relationship Management**—Enables organizations to more effectively and strategically manage relationships with channel and alliance partners, distributors, resellers, agents, brokers, and dealers.
- **Siebel Interactive Selling Suite**—Provides a comprehensive platform for business-to-business and business-to-consumer sales over the Web. Siebel eSales includes a complete set of out-of-the-box features to allow customers to quickly and easily find, and then order, the products and services that suit their needs.
- **Siebel eService**—Allows users to receive self-service and assisted service over the internet. Siebel eService provides customers with a secure, personalized experience for reviewing service issues, order status, and assets and resolving problems by using a full suite of problem resolution tools.
- **Siebel Assignment Manager**—Offers a rules-based engine that assigns work—including sales opportunities, service requests, and activities—based on employee skills, availability, territory, and other user-defined factors.
- **Siebel Workflow**—Automates user interaction, business processing, and integration workflows through use of a business-process-management engine. It is designed for easy administration and rapid customization through its graphical drag-and-drop user interface. Administrators can add custom or predefined business services, branching, updates and inserts, and subprocesses to create a workflow process tailored to their unique business requirements.
- **Siebel Enterprise Application Integration (EAI)**—Allows customers to integrate their existing systems with Siebel CRM. Siebel EAI supports several adapters. The Siebel EAI HTTP and MQ Series adapters were used in this benchmark.

METHODOLOGY

This benchmark was executed independently by Unisys at the Unisys Roseville, Minnesota, Performance Laboratory under the Siebel Platform Sizing and Performance Program guidelines, with test cases based on Siebel customer requirements. These test cases reflect some of the most critical and frequently used components of the Siebel CRM application. The test cases must run in steady state for at least one hour, and certification is dependent on the achievement of certain key performance indicators.

The test simulated the real-world requirements of a large organization of 30,000 concurrent users from the call center (sales and service representatives), partner organizations (Partner Relationship Management), customers (Web sales and Web service), and supporting application services such as work assignment (Siebel Assignment Manager) and business process management (Siebel Workflow). The application also simulated integration with legacy systems (Siebel EAI MQ Series Adapter) and Web systems (Siebel EAI HTTP Adapter) with more than 12,000,000 EAI transactions that can be executed between systems in a regular business day.

The end users were simulated by use of Mercury Interactive LoadRunner version 7.5, with a think time between user operations in the range of 5 to 55 seconds (an average of 30 seconds). The Siebel CRM Release 7 Assignment Manager processed assignment transactions for sales opportunities based on the positions and territories of employees. Siebel CRM Release 7 Workflow Manager executed workflow steps based on inserted service requests. The Siebel CRM Release 7 EAI MQ Series Adapter read from and placed transactions into IBM MQ Series queues. The Siebel CRM Release 7 EAI HTTP Adapter executed requests between different Web infrastructures.

Database Setup

Prior to benchmark execution, the database size was approximately 140GB. It was built to simulate customers with large transaction volumes and data distributions representing the most common customer data shapes. Below is a sampling of record volumes for key business entities of the standard Siebel volume database.

Business Entity	Number of Records
Accounts	1,897,161
Activities	8,744,305
Addresses	3,058,666
Contacts	3,366,764
Employees	21,000
Opportunities	3,237,794
Orders	355,297
Products	226,000
Quote Items	1,984,099
Quotes	253,614
Service Requests	5,581,538

Business Transactions

A total of 11 use cases of complex business transactions was executed simultaneously for 30,000 concurrent users. Between each user operation and the next one, the think time was in the range of 5 to 55 seconds (an average of 30 seconds). This section provides a high-level description of the 11 use cases tested.

Siebel Call Center

- Incoming call creates sales opportunity, quote, and order.
- Incoming call creates service request, customer profile, and activity plan.
- Service agent investigates and resolves service request.

Siebel Partner Relationship Management

- Partner creates account, contact, service request, and partner profile.
- Partner creates opportunity and activities and assigns sales team.
- Partner searches for service requests and enters new action for service request.

Siebel Interactive Selling Suite

- User browses product catalog for several items.
- User browses product catalog, places item in shopping cart, reviews account profile.
- User browses product catalog, executes complex search, purchases product.

Siebel eService

- User logs new service request, reviews open service requests.
- User searches for service centers, sends e-mail.

Siebel Enterprise Application Integration—Integrate Third-Party Application

- EAI requests are made using a customized account-integration object. The requests consist of 80 percent selects, 10 percent updates, and 10 percent inserts.

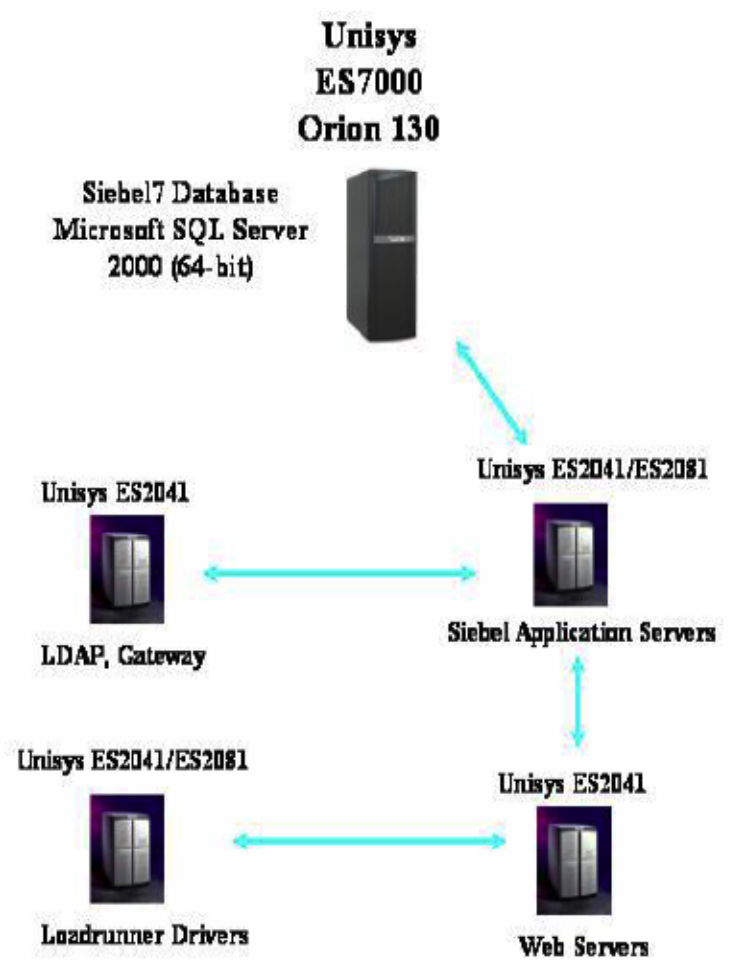
The use cases for the different applications are typically considered heavy transactions. For example, the high-level description of the “Incoming call creates sales opportunity, quote, and order” use case is as follows:

- Enable Siebel Search Center.
- Search for a nonexistent contact.
- After no records are found, navigate to the My Contacts page.
- Create a new contact, entering information into all of the fields in the list view.
- Navigate to the Contact’s Opportunity detail page.
- Create a new opportunity for the contact, including the opportunity name, description, projected revenue, and channel.
- Associate the opportunity with an account.

- Enter new products for the opportunity.
- Using the Siebel Auto Quote function, automatically generate a quote for the opportunity.
- Reprice the quote after changing the price list and discount level.
- Communicate the net price from the quote to the customer.
- Update the opportunity when repricing is completed.
- Using Siebel Auto Order, generate an order for the quote.
- Summarize the quote and order with the customer.

TOPOLOGY

This section shows the hardware topology of the systems used for the test as well as the hardware and software combinations used.



Web Servers:

- 9x ES2041

- 4x 700MHz Pentium III Xeon
- 4GB RAM
- Microsoft Windows 2000 Server with Internet Information Services 5.0
- Siebel CRM Release 7.0.3 SWSE
- Microsoft Windows 2000 Advanced Server, Service Pack 2 (SP2)

Gateway Server/LDAP:

- 1x ES2041
 - 4x 700MHz Pentium III Xeon
 - 4GB RAM
- Siebel CRM Release 7.0.3 Gateway
- Resonate version 3.2.2
- Netscape Directory Server 4.2
- Microsoft Windows 2000 Advanced Server, Service Pack 2 (SP2)

Application Servers:

- 37x ES2041
 - 4x 700MHz Pentium III Xeon
 - 4GB RAM
- 2x ES2081
 - 8x 700MHz Pentium III Xeon
 - 4GB RAM
- Siebel CRM Release 7.0.3
- Microsoft Windows 2000 Advanced Server, Service Pack 2 (SP2)

Database Server:

- ES7000 Orion 130
 - 16x 1GHz Itanium 2
 - 64GB RAM
- SQL Server 2000 Enterprise Edition (64-bit), QFE 8.00.789
- Microsoft Windows 2003 Datacenter for Itanium-based systems (64-bit)

LoadRunner Drivers:

- 4x ES2081
 - 8x 700MHz Pentium III Xeon

- 8GB RAM
- 2x ES2041
 - 4x 700MHz Pentium III Xeon; 4GB RAM
- Mercury Interactive LoadRunner version 7.5
- Microsoft Windows 2000 Advanced Server, Service Pack 2 (SP2)

RESULTS

Response Times and Transaction Throughput ^{3 4 5}

Workload	Number of Users	Avg. Operation Response Time (sec)	Business Transactions Throughput/hour
Call Center – Sales and Service	20,000	0.295	121,425
Partner Relationship Management	4,000	0.185	27,619
eSales	3,000	0.207	17,157
eService	3,000	0.147	40,521
Totals	30,000	N/A	206,722

Workload	Business Transactions Throughput/hour
Assignment Manager	37,694
EAI - HTTP Adapter	854,557
EAI - MQ Series Adapter	728,745
Workflow Manager	97,585

³ Response times are measured at the Web server instead of at the end user. The response times at the end user would depend on the network latency, the bandwidth between Web server and browser, and the time for browser rendering of content.

⁴ Actual results may vary, based on a broad range of implementation-specific factors, such as transaction mix, hardware platform, network parameters, and database size. Oracle does not warrant or guarantee that customers will obtain the same or similar results, even if they use the same or similar equipment and/or software applications. Oracle does not warrant, endorse, or guarantee any performance of any products, any results desired or achieved, or any statements made within this document.

⁵ The Business Transaction Throughput provides a measure of efficiency for a full sequence or iteration of Siebel operations that constitute a business transaction, using the 11 types of transactions tested in the use cases.

Server Resource Utilization

Node	Functional Use	Average % CPU Utilization	Average Memory Utilization (MB)
8 x ES2041	Web Server – Application Requests	56%	184
1 x ES2041	Web Server – Server workloads	39%	35
1 x ES2041	Siebel Gateway Server / LDAP	11%	37
35 x ES2041	Siebel Application Server – End Users	48%	3,132
1 x ES2041	Siebel Application Server – AM	3%	183
1 x ES2081	Siebel Application Server – EAI-MQ Series Adapter	50%	542
1 x ES2081	Siebel Application Server – EAI HTTP Adapter	64%	1077
1 x ES2041	Siebel Application Server - WF	35%	1665
1 x ES7000 Orion 130	Microsoft SQL Server 2000 (64-bit)	67%	26,355

Network Utilization

For 30,000 concurrent users, the network utilization measured was 2MB for the browser traffic, an average of 0.541Kbps.per user. These measurements incorporated compression for Web-server-to-browser traffic.

CONCLUSION

The test system demonstrated that Oracle's Siebel CRM Release 7 architecture on Unisys ES7000 and ES2000 servers and Microsoft SQL Server 2000 (64-bit) easily scales to 30,000 concurrent users.

- **Vertical scalability**—The Siebel CRM Release 7 server showed excellent scalability within a Unisys application server.
- **Horizontal scalability**—The benchmark demonstrates scalability across multiple Unisys servers without degradation.
- **Low network utilization**—The Siebel CRM Release 7 Smart Web Architecture and Smart Network Architecture efficiently managed the network, consuming only 0.541kilobits per second per user.
- **Efficient use of the database server**—Siebel CRM Release 7 Smart Database Connection Pooling and Multiplexing allowed the database to service 30,000 concurrent users and the supporting Siebel CRM Release 7 server application services with 3,302 database connections on the Unisys ES7000.

During the three-hour test, the database grew by about 9GB, demonstrating that the workload simulated by the system exceeded the requirements of some of the most demanding Siebel customers.

[Released April 21, 2003.]



Performance and Scalability Benchmark: Siebel CRM Release 7
on Unisys ES7000 and ES2000 Servers and Microsoft SQL Server 2000
Released April 2003

Oracle Corporation
World Headquarters
500 Oracle Parkway
Redwood Shores, CA 94065
U.S.A.

Worldwide Inquiries:
Phone: +1.650.506.7000
Fax: +1.650.506.7200
oracle.com

Copyright © 2003, 2006, Oracle. All rights reserved.
This document is provided for information purposes only and the contents hereof are subject to change without notice.
This document is not warranted to be error-free, nor subject to any other warranties or conditions, whether expressed orally or implied in law, including implied warranties and conditions of merchantability or fitness for a particular purpose. We specifically disclaim any liability with respect to this document and no contractual obligations are formed either directly or indirectly by this document. This document may not be reproduced or transmitted in any form or by any means, electronic or mechanical, for any purpose, without our prior written permission.
Oracle, JD Edwards, PeopleSoft, and Siebel are registered trademarks of Oracle Corporation and/or its affiliates. Other names may be trademarks of their respective owners.