

Performance and Scalability  
Benchmark: Siebel CRM Release  
7.7 Industry Applications on HP  
Integrity Server and Microsoft  
SQL Server 2000

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# Performance and Scalability Benchmark: Siebel CRM Release 7.7 Industry Applications on HP Integrity Server and Microsoft SQL Server 2000

## INTRODUCTION

This white paper describes the performance and scalability capabilities of Oracle's Siebel Customer Relationship Management (CRM) Application Release 7.7. The benchmark comprised 14,000 concurrent users running Siebel CRM Release 7.7 industry applications on HP Integrity Server and Microsoft SQL Server 2000 (64-bit).

Oracle's Siebel Platform Sizing and Performance Program is a Siebel-certified test suite executed independently by HP. HP completed the benchmark on April 10, 2005; Siebel certified it on April 18, 2005. Note that this benchmark data is intended for general information purposes and not as a substitute for implementation-specific sizing or benchmarks.

## Results Summary: 14,000-Active-Concurrent-User Benchmark <sup>1 2</sup>

Workload	Number of Users	Average Operation Response Time (sec)	Business Transactions Throughput/hour	Projected Daily Transactions
Financial Services Call Center	11,200	0.49	99,629	797,032
Partner Relationship Management	2,800	1.00	70,000	560,000
EAI – HTTP Adapter	N/A	N/A	281,626	2,253,008
<b>Totals</b>	<b>14,000</b>		<b>451,255</b>	<b>3,610,040</b>

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<sup>1</sup> 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.

<sup>2</sup> Siebel CRM Release 7.7 Industry Application Platform Sizing and Performance benchmarks are based on Siebel CRM Release 7.7 customized industry applications and reflect a heavier scenario mix and more-aggressive think times than earlier versions. Results of this benchmark are not comparable with those of prior Siebel CRM Release 7 benchmarks.

Test Component	Software	Version	Hardware	OS
Database Server	MS SQL Server 2000	Enterprise Edition (64-bit) sp3 qfe 1007	HP Integrity rx8620	Windows 2003 Datacenter 64-bit
App/Gtwy Servers	Siebel	7.7.1	HP ProLiant BL20pG2	Windows Server 2003 Enterprise Edition
Web Servers	MS IIS	6.0	HP ProLiant BL20pG2	Windows Server 2003 Enterprise Edition

## OVERVIEW

Siebel CRM Release 7.7 uses the enhanced Siebel CRM Release 7 Smart Web architecture, which introduced a new approach to Web applications. This architecture improves scalability while making efficient use of both network and Web server resources, allowing customers to use their existing network and Web server infrastructure.

The Siebel Platform Sizing and Performance Program is designed to stress the Siebel CRM Release 7.7 architecture and to demonstrate the performance and scalability of the application in a business solution context. Among the Siebel CRM Release 7.7 architecture features exercised are the following:

- **Smart Web Architecture**—Takes advantage of the newest 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.
- **Server Connection Broker**—Offers a preconfigured load-balancing option while also supporting a hardware-based solution. Resonate Central Dispatch may be used in Siebel CRM Release 7.7, but it is not required. In addition, the new Siebel Connection Broker component distributes tasks among multiple processes, improving intraprocess load-balancing characteristics.
- **Smart Database Connection Pooling and Multiplexing**—Allows customers to scale their databases without introducing expensive and complex transaction-processing monitors.
- **Server Request Broker**—Provides component-level load balancing across multiple Siebel servers, without the expense and complex administration of transaction-processing monitors.

- **Enterprise Application Integration**—Allows customers to integrate their existing systems with Siebel CRM applications.

This test simulated a large corporation with 14,000 concurrent active users in multiple departments and addressed key business requirements:

- **Siebel Financial Services Call Center**—Provides the most complete solution for sales and service, allowing customer service and telesales representatives to provide superior customer support, improve customer loyalty, and increase revenues through cross-selling and up-selling.
- **Siebel Partner Relationship Management**—Enables organizations to effectively and strategically manage relationships with partners, distributors, resellers, agents, brokers, and dealers.
- **Siebel Workflow**—Automates user interaction, business processes, and integration through use of a business-process-management engine. It allows simple administration and customization through a graphical drag-and-drop user interface. Administrators can add custom or predefined business services and specify logical branching, updates, 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 applications with Siebel CRM applications. Siebel EAI supports several adapters. The Siebel EAI HTTP Adapter was used in this benchmark.

## METHODOLOGY

This benchmark was executed independently by HP under the Siebel CRM Release 7.7 Industry Application Platform Sizing and Performance Program guidelines. Test cases are based on Siebel customer requirements and exercise 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 real-world requirements of a large organization, consisting of 14,000 concurrent, active users in a call center organization. Test conditions simulated service representatives running Siebel Financial Services Call Center, and partner organizations running Siebel Partner Relationship Management (Web sales and Web Service).

Siebel Workflow and the Siebel Scripting Engine were used to incorporate business-process-management customizations.

The application also simulated integration with Web systems using the Siebel Enterprise Application Integration component and the Siebel HTTP Adapter. In this case, an eight-hour business day included more than 2,200,000 EAI transactions between systems.

End users were simulated by use of Mercury LoadRunner version 7.8 SP1. The think-time range between user operations was 13 to 23 seconds. The Siebel CRM Release 7.7 Scripting Engine was invoked to assign service requests and navigate the user to the appropriate views. Siebel CRM Release 7.7 Workflow Manager executed workflow steps based on inserted service requests. The Siebel CRM Release 7.7 EAI HTTP Adapter executed requests between different Web infrastructures.

### Database Setup

Prior to benchmark execution, the database size was approximately 250GB. It was constructed based on Siebel customer experience and requirements and was based on the Siebel CRM Industry Application repository and data model—representing the most common data distribution and volumes in high-transaction-rate implementations. The table below shows a sampling of record volumes for key business entities in the standard Siebel volume database.

Business Entity	Number of Records
Accounts	2,233,637
Activities	6,685,419
Addresses	3,475,662
Contacts	3,536,268
Employees	30,000
Opportunities	3,429,952
Orders	496,909
Products	230,102
Quote Items	1,984,252
Quotes	253,693
Service Requests	5,651,814

### Business Transactions

Several complex business transactions were executed simultaneously for 14,000 concurrent users. Between each user operation and the next one, the think time averaged approximately 15 seconds. This section provides a high-level description of the use cases tested.

#### Siebel Financial Services Call Center—Create and Assign Service Requests

- Service agent searches for contact.
- Service agent checks entitlements.
- Service request is created.
- Service agent populates service request with appropriate detail.
- Service agent creates activity plan to resolve issue.

- Using Siebel Script, the service request is automatically assigned to appropriate representative to address issue.

### **Siebel Partner Relationship Management—Sales and Service**

- Partner creates new service request with appropriate detail.
- Service request is automatically assigned.
- Saving service request invokes scripting that brings user to the appropriate opportunity screen.
- New opportunity with detail is created and saved.
- Saving opportunity invokes scripting that brings user back to service request screen.

### **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 are typically considered heavy transactions. For example, the high-level description of the sequential steps for the “Create and Assign Service Requests” use case is as follows:

- Enable Siebel Search Center.
- Search for a contact.
- Review contact detail and create a new service request.
- Add details to the service request.
- From the service request view, search for an account.
- Select an account and associate it with the service request.
- Navigate to the verify tab and select entitlements.
- Verify entitlements and continue service request investigation.
- Search for insurance group; select the appropriate policy and product.
- Create a new contact, entering information into all of the fields in the list view.
- Complete service request details and save the service request.
- Select the activity plan option and automatically generate an activity plan for the service request.
- Scripting will automatically assign the service request.
- Summarize the service request with the customer.

## **TOPOLOGY**

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

### **Web Servers:**

- 4x HP ProLiant BL20pG2
  - 2x Intel XeonDP 3.2GHz/1MB
  - Microsoft Windows Server 2003 Enterprise Edition
  - 2GB RAM

### **Application Servers:**

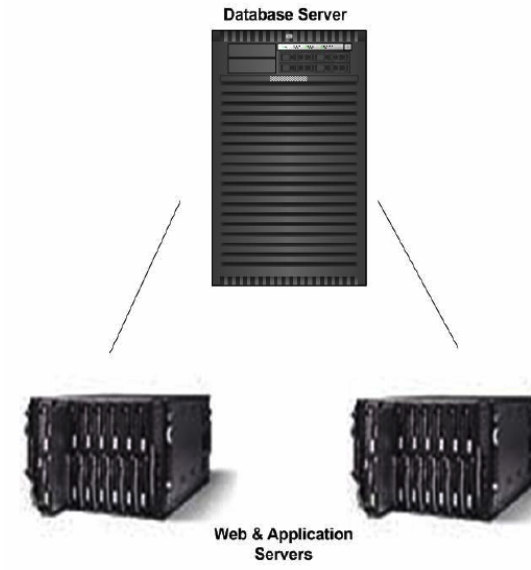
- 12x HP ProLiant BL20pG2
  - 2x Intel XeonDP 3.2GHz/2MB
  - Microsoft Windows Server 2003 Enterprise Edition
  - 8GB RAM

### **Database Server:**

- 1x HP Integrity rx8620
  - 8x Intel Itanium 1.5GHz/6MB
  - Microsoft Windows Server 2003 (64-bit) Datacenter
  - 32GB RAM

### **LoadRunner Drivers:**

- 6x HP ProLiant DL360G3
  - 2x Intel Xeon DP 3.6GHz/2MB
  - 4GB RAM
  - LoadRunner version v7.81 sp1



## RESULTS

### Response Time and Transaction Throughput<sup>3 4 5</sup>

Workload	Number of Users	Average Operation Response Time (sec)	Business Transactions Throughput/hour	Projected Daily Transactions
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### Server Recourse Utilization

Node	Users	Functional Use	% CPU	Memory Utilization (GB)
7 x ProLiant BL20pG2	11,200	Application Server-Call Center Users	98	6
4 x ProLiant BL20pG2	2,800	Application Server-PRM Users	78	4.3
4 x ProLiant BL20pG2	14,000	Web Server	36	.08
1 x HP Integrity rx8620	14,000	Database Server	90	30
1 x ProLiant BL20pG2		EAI HTTP Server	79	.7

### Network Utilization

For 14,000 concurrent users, the network utilization measured was 35.94Mbps for the browser traffic, an average of 2.57Kbps per user. These measurements incorporated compression for Web-server-to-browser traffic.

## CONCLUSION

The test system demonstrated that Oracle’s Siebel CRM Release 7.7 architecture on HP Integrity and ProLiant servers easily scales to 14,000 concurrent users.

- **Vertical scalability**—The Siebel CRM Release 7.7 server showed excellent scalability within an application server.

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<sup>3</sup> 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.

<sup>4</sup> A business transaction is a defined set of steps, activities, and application interactions used to complete a business process, such as “Create and Assign Service Requests.” “Search for a contact” is an example of a step in a business transaction. For a detailed description of business transactions, see the “Business Transactions” section.

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- **Horizontal scalability**—The benchmark demonstrated scalability across multiple servers without degradation.
- **Low network utilization**—The Siebel CRM Release 7.7 Smart Web Architecture and Smart Network Architecture efficiently managed the network, consuming only 2.57 kilobits per second per user.
- **Efficient use of the database server**—Siebel CRM Release 7.7 Smart Database Connection Pooling and Multiplexing allowed the database to service 14,000 concurrent users and the supporting Siebel Release 7.7 server application services with 1,599 database connections.

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