

Performance and Scalability
Benchmark: Siebel CRM Release 8.0
Industry Applications on HP
BL460c/BL680c Servers running
Microsoft Windows Server 2008
Enterprise Edition and SQL Server
2008 (x64)

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Performance and Scalability Benchmark: Siebel CRM Release 8.0 Industry Applications on HP BL460c/BL680c Servers running Microsoft Windows 2008 Server Enterprise Edition and SQL Server 2008 (x64)

INTRODUCTION

This white paper describes the performance and scalability capabilities of Oracle's Siebel Customer Relationship Management (CRM) Applications Release 8.0. The benchmark comprised 12,000 concurrent users running Siebel CRM Release 8.0 industry applications on HP BL460c and SQL Server 2008 on HP BL680c. The servers supporting the Siebel Gateway, Siebel Application Server, Siebel Web Server SWSE Plug-in and SQL Server 2008 DB ran the Microsoft Windows 2008 Server EE operating system.

Oracle's Siebel Platform Sizing and Performance Program is a test suite certified by Siebel and executed independently by HP. HP completed the benchmark on Sep 2, 2008; Oracle certified it on October 22, 2008. Note that this benchmark data is intended for general information purposes and not as a substitute for implementation-specific sizing or benchmarks.

Results Summary: 12,000 Active Concurrent User Benchmark ^{1 2}

Workload	Number of Users	Average Operation Response Time (sec)	Business Transactions Throughput/hour	Projected Daily Transactions
Financial Services Call Center	3,600	0.097	39,258	314,064
Partner Relationship Management	1,200	0.535	38,495	307,960
EAI – Web Services	7,200	0.044	108,224	865,792
Totals	12,000	N/A	185,977	1,487,816

¹ 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.

² Siebel CRM Release 8.0 Industry Application Platform Sizing and Performance benchmarks are based on Siebel CRM Release 8.0 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	SQL Server 2008	Enterprise x64 Edition build 10.00.1600.22	HP BL680c	MS Windows 2008 Server EE, 64-bit
App/Gtwy Server	Siebel CRM	8.0	3 X HP BL460c	MS Windows 2008 Server EE, 32-bit
Web Server	Microsoft IIS	7.0	HP BL460c	MS Windows 2008 Server EE, 32-bit

OVERVIEW

Oracle's Siebel Platform Sizing and Performance Program is designed to stress the Siebel CRM Release 8.0 architecture and to demonstrate that large customers can successfully deploy many thousands of concurrent users. Among the Siebel CRM Release 8.0 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 8.0 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**—The Siebel Connection Broker (SCBroker) is a server component that provides intraserver loadbalancing. SCBroker distributes server requests across multiple instances of Application Object Managers (AOMs) running on a Siebel Server.
- **Smart Database Connection Pooling and Multiplexing**—Allows customers to scale their databases without introducing expensive and complex transaction-processing monitors.
- **Server Request Broker**— Server Request Broker (SRBroker) processes synchronous server requests—requests that must be run immediately, and for which the calling process waits for completion.
- **Enterprise Application Integration**—Allows customers to integrate their existing systems with Siebel CRM applications.
- **eScript**— eScript is a scripting or programming language that application developers use to write simple scripts to extend Siebel applications. JavaScript, a popular scripting language used primarily on Web sites, is its core language.

This test simulated a large corporation with 12,000 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 specifies logical branching, updates, inserts, and sub processes to create a workflow process tailored to their unique business requirements.
- **Siebel Enterprise Application Integration (EAI) Integrate Third-Party Application and support of web services**—Allows customers to integrate their existing applications with Siebel CRM applications. Siebel 8.0 is planned to include pre-built Web Services that expose industry leading capabilities to various channels and applications, enabling customers to extend this functionality further across their enterprises, seamlessly exposing it real-time through standard Web portals and other Web Service-enabled environments that service a significantly broader range of customers and interaction models.

METHODOLOGY

This benchmark was executed independently by HP under the Siebel CRM Release 8.0 Industry Applications Platform Sizing and Performance Program (PSPP) 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 12,000 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 Siebel Web Services.

End users were simulated by use of Mercury LoadRunner version 8.1. The think time range between user operations was 10 to 30 seconds. The Siebel CRM Release 8.0 Scripting Engine was invoked to assign service requests and navigate the user to the appropriate views. Siebel CRM Release 8.0 Workflow Manager executed workflow steps based on inserted service requests. The Siebel CRM Release 8.0 EAI Web Services executed requests between different Web infrastructures.

Database Setup

Prior to benchmark execution, the database was approximately 115GB. It was constructed based on Siebel customer experience and requirements and 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 Siebel CRM Industry Application volume database.

Business Entity	Number of Records
Accounts	1,876,349
Activities	6,107,269
Addresses	3,821,180
Contacts	3,715,329
Employees	86,381
Opportunities	3,398,074
Orders	499,947
Products	288,618
Quote Items	1,990,404
Quotes	20,571
Service Requests	6,078,430

Business Transactions

Several complex business transactions were executed simultaneously for 12,000 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— Incoming Call Creates Opportunity, Quote and Order

- Create a new contact
- Create a new Opportunity for that contact
- Add two products to Opportunity
- Navigate to Opportunities - Quotes View
- Click "AutoQuote" button to generate quote
- Enter Quote Name, and Price List
- Drilldown on the quote name to go to Quote - Line Items View and specify discount
- Click "Reprice All" button
- Update opportunity
- Navigate to Quotes - Orders View
- Click on "AutoOrder" button to automatically generate order
- Navigate back to Opportunity

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.

WebServices - Find, Submit a New Service Request and Update the Service Request

- There is no UI presentation layer, LR simulates J2EE web application to send web service request to Siebel server (EAIObjMgr_enu) to invoke Siebel business services.
- Siebel Web Services framework has an ability to generate WSDL files to describe the Web Services hosted by the Siebel application. Also, the Siebel Web Services framework can call external web services. This is accomplished by importing a WSDL document, described as an external Web Service, using the WSDL import wizard in Siebel Tools.
- Each Web Service exposes multiple methods. PSPP3 scenario covers methods like Query Service Request, Create Service Request and Update Service Request
- The Web Service authentication is done using session token.
- “ServerDetermine” session type is used and session token is maintained between each request to avoid "Login" for each request. To use “ServerDetermine” session type a login WS call (SessionAccessPing) should be made to retrieve session token before calling other web services. At the end of scenario, a logout (SessionAccessPing) should be called to make session token unavailable.

TOPOLOGY

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

PSPP Components

- Siebel CRM Release 8.0 Industry Applications
- Microsoft Windows 2008 Server Enterprise Edition
- SQL Server 2008

Database Server

- 1 x 4way HP BL680c Blade Server
 - 4 x 2.4GHz Intel Xeon Quad-Core CPUs (16 CPU Cores)
 - 32GB RAM
 - Windows 2008 Server Enterprise, x64 Edition, Hyperthreading Disabled
 - SQL Server 2008 Enterprise x64 Edition

Gateway/Application Server

- 1 x 2way HP BL460c
 - 2 x 3.16GHz Intel Xeon Quad-Core CPUs (8 CPU Cores)
 - 32GB RAM
 - Microsoft Windows 2008 Server EE, 32-bit, Hyperthreading Disabled
 - SQL Server Native Client v9
 - Siebel CRM 8.0 SIA [20204] ENU

Application Server

- 2 x 2way HP BL460c
 - 2 x 3.16GHz Intel Xeon Quad-Core CPUs (8 CPU Cores)
 - 32GB RAM
 - Microsoft Windows 2008 Server EE, 32-bit, Hyperthreading Disabled
 - SQL Server Native Client v9
 - Siebel CRM 8.0 SIA [20204] ENU

Web Server

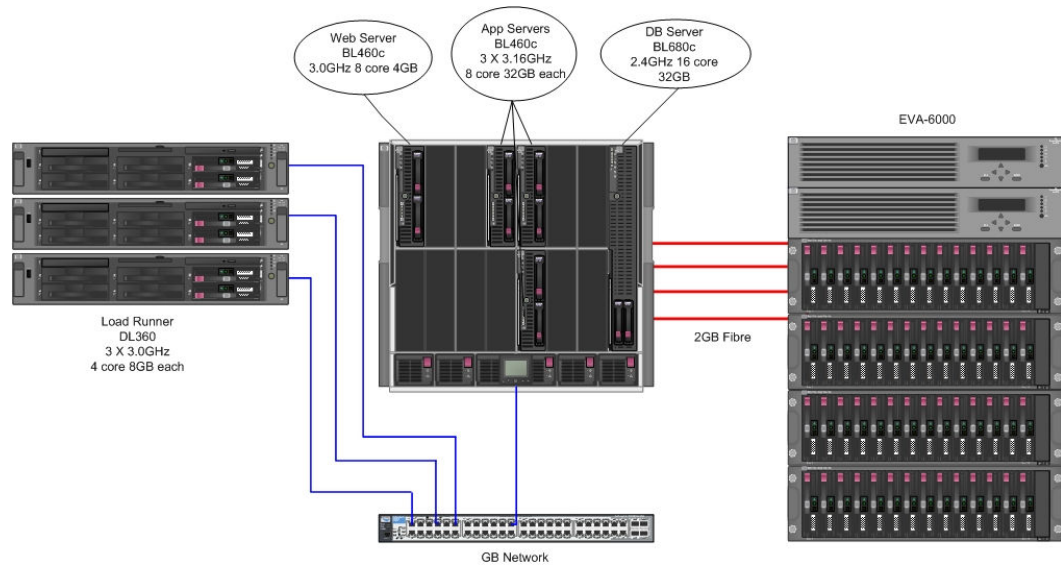
- 1 x 2way HP BL460c
 - 2 x 3.0GHz Intel Xeon Quad-Core CPUs (8 CPU Cores)
 - 4 GB RAM
 - Microsoft Windows 2008 Server EE, 32-bit, Hyperthreading Disabled
 - Microsoft IIS 7.0
 - Siebel CRM 8.0 SIA [20204] ENU

HP LoadRunner Controller

- 1 x HP DL360 G4
 - 2 x 2.8GHz Intel Xeon Dual-Core CPUs
 - 16GB RAM
 - Microsoft Windows Server 2003 EE
 - LoadRunner version 8.1

HP LoadRunner Host

- 2 x HP DL360 G4
 - 2 x 2.8GHz Intel Xeon Dual-Core CPUs
 - 4GB RAM
 - Microsoft Windows 2003 Server EE
 - LoadRunner version 8.1



RESULTS

Response Times and Transaction Throughput 3 4 5

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

Tier	Users	Functional Use	% CPU	Memory Utilization (GB)
Web	12,000	Web Server	20	.2
Application	4,000	Gateway/Application Server	75	16
Application	4,000	Application Server	69	16
Application	4,000	Application Server	70	16
Database	12,000	Database Server	81	27

Network Utilization

For 12,000 concurrent users, the network utilization measured was 111.8 Mbps for the browser traffic, an average of 9.5 Kbps per user.

CONCLUSION

The test system demonstrated that Oracle's Siebel CRM Release 8.0 architecture and HP BL460c/BL680c Servers form a very powerful and cost effective business solution.

- **Siebel on HP Blades** — This benchmark demonstrated the versatility and flexibility of HP Blades hardware. The benchmark started with three identical BL460c and one HP BL680c. The servers supporting Siebel Application components and SQL Server 2008 ran Microsoft Windows 2008 Server EE.
- **Vertical scalability** — The Siebel CRM Release 8.0 Application Server showed excellent scalability on an HP BL460c server. Many users can be supported with minimal hardware.
- **Low network utilization** — The Siebel CRM Release 8.0 Smart Web Architecture and Smart Network Architecture efficiently managed the network, consuming only 9.5 kilobits per second per user.
- **Efficient use of the database server** — Siebel CRM Release 8.0 Smart Database Connection Pooling and Multiplexing allowed the database to service 12,000 concurrent users and the supporting Siebel CRM Release 8.0 server application services with only 701 database connections.

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 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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