



PEOPLESOFT CRM 8.8 USING DB2 FOR Z/OS ON AN IBM z990 2084-B16 [5-way LPAR]

As a global leader in e-business applications, PeopleSoft is committed to delivering high performance solutions that meet our customers' expectations. Business software must deliver rich functionality with robust performance. This performance must be maintained at volumes that are representative of customer environments.

PeopleSoft benchmarks demonstrate our software's performance characteristics for a range of processing volumes in a specific configuration. Customers and prospects can use this information to determine the software, hardware, and network configurations necessary to support their processing volumes.

The primary objective of our benchmarking effort is to provide as many data points as possible to support this important decision.



SUMMARY OF RESULTS

Benchmark (English)	PeopleSoft CRM 8.8	
	Medium Data Volume Model	
	Average Response	2,557 sec
	Concurrent Users	1,426
Référence d'exécution (Français)	PeopleSoft CRM 8.8	
	modèle de données de taille moyenne	
	temps de réponse	2,557 sec
	Concourants Utilisateurs	1.426
Benchmark-Test (Deutsch)	PeopleSoft CRM 8.8	
	Datenbankmodell "Medium"	
	Antwortzeit	2,557 sek
	Gleichzeitige Benutzer	1.426
Patrón de rendimiento (Español)	PeopleSoft CRM 8.8	
	Modelo con volumen media de datos	
	tiempo de reacción	2,557 sec
	Simultáneos Utilizadores	1.426
Benchmark (Português)	PeopleSoft CRM 8.8	
	Modelo de Médio Volume	
	tempo de resposta	2,557 sec
	Simultâneos Usuários	1.426

The benchmark measured Services client response times for 500, 1,000 and 1,426 concurrent users. Our standard Medium CRM Support (Call-Center) data composition model was used and the testing was conducted in a controlled environment with no other applications running. **The goal of this benchmark was to obtain baseline performance data for PeopleSoft CRM 8.8 on the DB2 Database with IBM servers. Prior benchmarks run using this benchmark Performance Toolkit (PTK) are not valid for comparison because of Toolkit modifications which alter the results.**

Figure 1 illustrates average response times for a single user, and for a single user with 500, 1,000 and 1,426 concurrent users.

PeopleSoft CRM 8.8 using DB2 for z/OS on an IBM z990 and pSeries p690

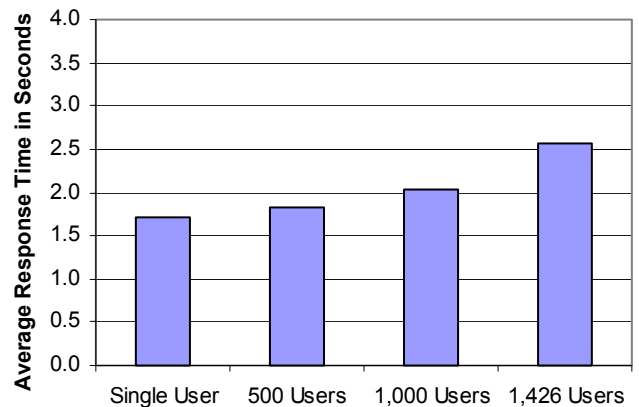


Figure 1: Average Response Times

* The response times are weighted averages corresponding to the transaction mix percentages in Table 1.

Note that the peak of 1,426 concurrent users was limited solely by the Performance Toolkit (PTK) used, rather than being a limitation of the test hardware and software. The test implementation could have supported many more users.

BENCHMARK PROFILE

In November 2003, PeopleSoft and IBM conducted a benchmark in Montpelier, ATS PSSC, France to measure the online performance of PeopleSoft CRM Customer Data Model and Services 8.8 using IBM® DB2® for z/OS 7.1 on an IBM® zSeries 990 model 2084-B16 database server, running IBM® z/OS version 1.4. A 13-way LPAR of an IBM @server pSeries 690 application server and three 1-way LPARs of an IBM @server pSeries 690 web server ran IBM AIX 5L™ v5.2.

METHODOLOGY

Mercury Interactive LoadRunner® was used as the load driver, simulating concurrent users. It submitted a business transaction at an average rate of one every 3—6 minutes (varies by process) for each concurrent user to the application servers via the web servers.

Mercury Interactive QuickTest® Professional was used to automatically submit transactions and to record the benchmark measurements on the client PC.

Measurements were recorded when the user load was attained and the environment reached a steady state.

Figure 2 shows a typical 4-tier benchmark configuration. This benchmark was run using a physical 4-tier configuration; with the database server, the application server and the web server all being separate partitions of a single physical server.

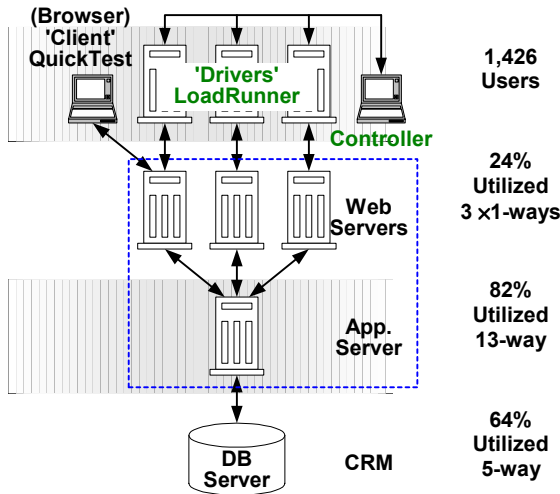


Figure 2: 4-Tier Configuration

Load times were measured from the time the user clicks a hyperlink or push button until the new HTML page has been rendered. Update times were measured from the time the user clicks the <SAVE> button until the new HTML page has been rendered.

Measurements were recorded on all of the servers when the user load was attained and the environment reached a steady state.

BUSINESS PROCESSES

PeopleSoft defines a business transaction as a series of HTML pages that guide a user through a business process, such as creating a new business case.

The two PeopleSoft 8 CRM 8.8 business processes tested in this benchmark are as follows:

SUPPORT

1. Case Resolution: After logging in, the support user clicks on “My Worklist,” sorts the list by priority and opens a case. The user drills down and modifies the case by adding a note. The status of the case is changed and the case is saved.

2. New Customer Creation: After logging in, the support user clicks on “Add a New Case.” A customer name is searched for, but it isn’t found so that a new company & contact entry must be created. All of the company and contact details are entered along with a product and issue summary. The new case is saved.

Process	% of Users	Avg. Pacing
1. Clicks on “My Worklist”	60%	6 min
Modify Case		
Save Case		
2. Search for customer	40%	3 min
Quick Create		
Save Case		
Total	100%	4.8 min average

Table 1: Business Process Mix

Table 1 shows the proportions of the business processes used in the measurements of this benchmark. The proportions are intended to simulate a typical user scenario.

ONLINE PROCESS RESULTS

Table 2 shows average response times, in seconds, for each business process along with the overall averages. It also shows the approximate overall transaction rate.

Process		Single User	500 Users	1,000 Users	1,426 Users
Open WorkList	Worklist	2.0	2.115	2.359	2.925
Modify WorkList Case	Support	1.970	2.028	2.218	2.859
Save WorkList Case	Support	1.299	1.338	1.465	1.706
Search Customer	Support	0.756	0.786	0.813	0.897
Quick Create Company	CDM	2.478	2.835	3.293	4.406
Save Support Case	Support	1.890	1.933	2.009	2.641
* Weighted Avg. Response		1.737	1.837	2.024	2.557
Transactions/minute		N/a	225	450	640

Table 2: Business Process Runtimes

The database and application servers were processing a total of ~640 business processes per minute at the peak load of 1,426 concurrent users.

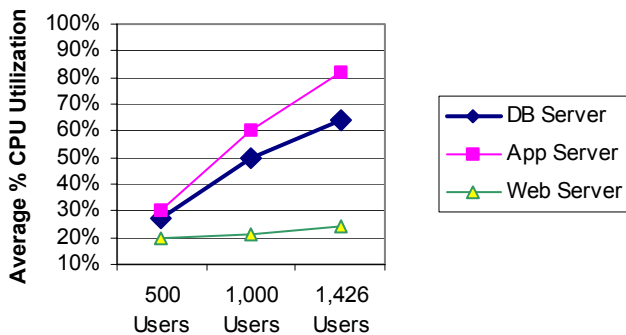
The transaction rate is calculated by dividing the total number of completed transactions by the test duration.

Performance may vary on other hardware and software platforms and with other data composition models.

SERVER PERFORMANCE

Figure 3 shows the average CPU utilization for the Database server, Application servers and Web servers. This is the average across all of the active CPUs for the duration of the

PeopleSoft CRM 8.8 using DB2 for z/OS on an IBM z990 and pSeries p690



test.

Figure 3: Average Server CPU Utilization

DATA COMPOSITION DESCRIPTION

The standard database was comprised of:

Data Composition	Standard Medium Model
# of Consumers	5,000,000
# of Companies	1,000,000
# of contacts per Company	5
# of addresses per Company	2
# of contact methods per Consumer	3 (1 phone, 1 address, 1 email)
# of Workers	500, 1,000, or 1,426
# of Cases	5,000,000
# of Products/Items	45,000
# ERMS email	5000

Table 3: Data Composition

I/O SUBSYSTEM PERFORMANCE

The 6 Terabyte IBM® TotalStorage® Enterprise Storage Server® (SHARK) was used for storage. I/O performance is crucial to overall performance and is summarized in Table 4.

The data transfer rate (MB/Second) and the number of transfers (Transfers/Second) are shown for the 500, 1,000 and 1,426 user tests.

DB Server	MB/Second	Transfers/Second
	Average	Average
500 Users	22.44	291.93
1,000 Users	37.34	509.01
1,426 Users	43.38	631.10

Table 4: I/O Performance

BENCHMARK ENVIRONMENT

HARDWARE CONFIGURATION

Database Server:

The IBM® zSeries 990 model 2084-B16 with 5 CPUs online was used as the database server. It was equipped with the following:

- 5 × IBM® z990 Gen1 Processors (16 Processors populated, but only 5 online for this testing)
- 32 Gigabytes of Memory (<2 GB used for this test)

The IBM® zSeries 990 was attached to:

- One IBM® Enterprise Storage Server, 2105-800 Turbo, 72 GB disk size, 6 Terabytes of total Disk Space, with 210 Gigabytes allocated (~154 Gigabytes used)

Application Server(s):

A 13-CPU LPAR of the IBM® @server pSeries 690 (RS/6000 7040-681) server was used as the application server. It was equipped with the following:

- 13 × 1.7 GHz POWER4+® Processors, each with 32 Kilobytes of Level-1 Data Cache and 64 Kilobytes of Level-1 Instruction Cache, 0.78 Megabytes of Level-2 Cache (1.5 MB shared by each pair of CPUs), with an average of 16 Megabytes of Level 3 Cache (32 MB shared by each pair of CPUs)
- 48 Gigabytes of Memory (<8 GB used)

Web Server(s):

3 × 1-CPU LPAR of the IBM® @server pSeries 690 (RS/6000 7040-681) server were used as the web servers. They were equipped with the following:

- 1 × 1.7 GHz POWER4+® Processors, each with 32 Kilobytes of Level-1 Data Cache and 64 Kilobytes of Level-1 Instruction Cache, 0.78 Megabytes of Level-2 Cache (1.5 MB shared by each pair of CPUs), with an average of 16 Megabytes of Level 3 Cache (32 MB shared by each pair of CPUs)
- 7 Gigabytes of Memory (<3 GB used)

QuickTest Client PC:

IBM® NetVista with the following:

- 1.8 Gigahertz Pentium® III Mobile Processor
- 768 Megabytes Memory

Load Simulation Controller(s):

1 × IBM® NetVista served as the driver controller. It was equipped with the following:

- 1.8 Gigahertz Pentium® III Mobile Processor
- 1 Gigabyte of Memory

Load Simulation Driver(s):

3 × IBM® @server xSeries model x335 2-ways were used as the drivers. They were equipped with the following:

- 2 × 2.8 GHz Intel® Xeon™ Processors MP, each with 1 Megabyte of Level-3 Cache
- 2.6 Gigabytes of Memory

SOFTWARE VERSIONS

PeopleSoft 8 CRM 8.8

PeopleTools 8.43.10

IBM® DB2® for z/OS 7.1 PUT 0703

IBM® z/OS version 1.4 RSU0703 (on the Database server)

IBM® AIX® 5L™ v5.2 64-bit (on the application server and web server)

IBM® DB2 Connect 7.1 w/FixPack 9

Microsoft® Windows® 2000 Advanced Server 5 w/SP 3 (on the drivers, driver controller and client)

IBM® WebSphere® Single Server Version 4.0.3 with JRE 1.3.1

Mercury Interactive LoadRunner® 7.6

Mercury Interactive QuickTest® Professional 6.0

BEA TUXEDO® 6.5 p190j1.2p4

Microsoft Internet Explorer® 6.0

ICE/APRDs applied:

586636000

587537000

587620000

587685000

587894000

591375000

591375000

591397000



PeopleSoft Worldwide Headquarters

4460 Hacienda Drive

P. O. Box 8018

Pleasanton, California 94588-8618

Tel 925/694-3000

Fax 925/694-3100

Email info@peoplesoft.com

World Wide Web <http://www.peoplesoft.com>

PeopleSoft, PeopleTools, PS/nVision, PeopleCode, PeopleBooks, *PeopleTalk*, and Vantive are registered trademarks, and Pure Internet Architecture, Intelligent Context Manager, and The Real-Time Enterprise are trademarks of PeopleSoft, Inc. All other company and product names may be trademarks of their respective owners. The information contained herein is subject to change without notice. Copyright © 2003 PeopleSoft, Inc. All rights reserved. C/N 0543-0304

IBM, International Business Machines, the IBM Logo, pSeries, xSeries, zSeries, and z/OS are trademarks or registered trademarks of International Business Machines, Inc. in the United States and other countries.

COPYRIGHT© 2003 PeopleSoft, Inc.