

PEOPLESOFT CRM FOR COMMUNICATIONS 8.9 USING DB2 UDB FOR AIX ON IBM® pSERIES 630 and 650 SERVERS

As a global leader in e-business applications, Oracle USA 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.

Oracle USA 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 8.9	
	Medium Data Volume Model	
	Average Response	2.693 sec
	Concurrent Users	4,250
Référence d'exécution (Français)	PeopleSoft CRM 8.9	
	modèle de données de taille moyenne	
	temps de réponse	2,693 sec
	Concourants Utilisateurs	4.250
Benchmark-Test (Deutsch)	PeopleSoft CRM 8.9	
	Datenbankmodell "Medium"	
	Antwortzeit	2,693 sek
	Gleichzeitige Benutzer	4.250
Patrón de rendimiento (Español)	PeopleSoft CRM 8.9	
	Modelo con volumen media de datos	
	tiempo de reacción	2,693 sec
	Simultáneos Utilizadores	4.250
Benchmark (Português)	PeopleSoft CRM 8.9	
	Modelo de Médio Volume	
	tempo de resposta	2,693 sec
	Simultâneos Usuários	4.250

Three 8-way pSeries 650 application servers and one 4-way pSeries 630 application server also ran IBM AIX 5L V5.2. Two 4-way pSeries 630 web servers also ran IBM AIX 5L V5.2. An IBM TotalStorage® DS4500, configured for RAID 5, provided the disk storage.

The benchmark measured Services client response times for 1,000 and 4,250 concurrent users. Our standard Medium CRM Telecommunications 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 for Communications 8.9 on the DB2 Database with IBM servers.**

Figure 1 illustrates average response times for a single user, and for a single user with 1,000 and 4,250 concurrent users.

PeopleSoft CRM for Communications 8.9 using DB2 UDB for AIX on pSeries 650s and 630s

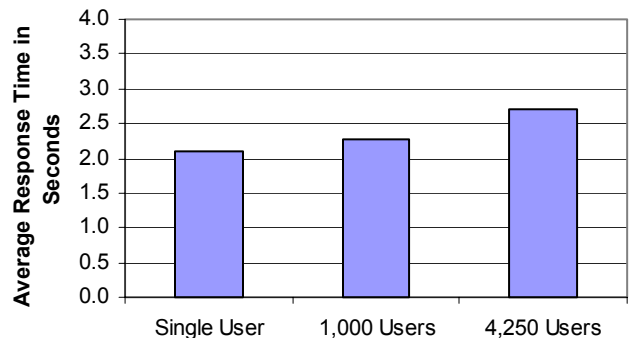


Figure 1: Average Response Times

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

BENCHMARK PROFILE

In January 2005, Oracle USA (PeopleSoft) conducted a benchmark in Pleasanton, CA to measure the online performance of PeopleSoft CRM for Communications 8.9 using IBM DB2® Universal Database™ Enterprise Server Edition Version 8.1 w/FP 7 for AIX™ on an 8-way IBM® pSeries® 650 database server, running 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 10 minutes 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.

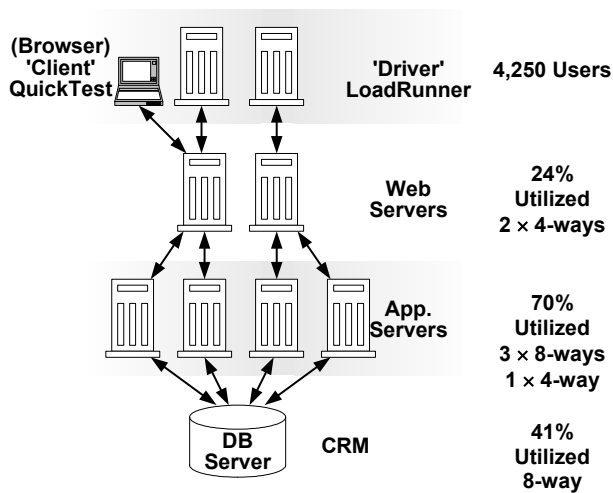


Figure 2: 4-Tier Configuration

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

Oracle USA (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 eleven PeopleSoft 8 CRM 8.9 business processes tested in this benchmark are as follows:

COMMUNICATIONS

1. Open Common Worklist: After logging in, the user clicks on the “Worklist” link.

2. Open Business Project Task from Worklist: After logging in, the user clicks on the “Worklist” link. Click on one of the 20 tasks.

3. Open Case from Worklist: After logging in, the user clicks on the “Worklist” link. Click on one of the 20 cases.

4. Back Office Search-Consumer: After logging in, the user clicks on the “Customers CRM” link. Search for a person.

5. Back Office Search-Company: After logging in, the user clicks on the “Customers CRM” link. Search for a company.

6. View Bill: After logging in, the user clicks on the “Customers CRM” link. Search for a person. Select the person and click to get a 360-degree view of that person. Click on “Bills Pending,” then on a specific bill, then on “Bill Items.”

7. View Case: After logging in, the user clicks on the “Customers CRM” link. Search for a company. Click to get the 360-degree view of the company, then click on an ‘Open Case.’

8. Create and Submit Quote: After logging in, the user clicks on the “Customers CRM” link. Search for a company. Click to get the 360-degree view of the company, then click to add a quote. Search for a contact and select the contact. Click to add a product to quote in ‘Line Details.’ Click on ‘Phones’ and select a model. Click ‘Add to Order.’ Change the quantity and click ‘Update Total’ then ‘Submit.’

9. Add New Order: After logging in, the user clicks on the “Customers CRM” link. Search for a company. Click to get the 360-degree view of the company, then click to add a new order. Update a contact then click to add a product. Click on ‘Phones’ and select a model. Click ‘Add to Order’ and ‘Submit.’

10. Add New Case: After logging in, the user clicks on the “Customers CRM” link. Search for a company. Click to get the 360-degree view of the company, then click to add a case. Select a quick code then click to search on ‘Contact.’ Select a contact and click to ‘Save Case.’

11. Service Management Order: After logging in, the user clicks on the “Customers CRM” link. Search for a person. Click to get the 360-degree view of the person, then click on “Activated” under “Installed Services.” Click on the ‘Installed Product’ and click to “Change Features” then click to ‘Configure Package.’ Select ‘Text Messaging’ and click to Submit.

Process	% of Users	Avg. Pacing
Open Common Worklist	29%	10 min
Open BP Task from Worklist	22%	10 min
Open Case from Worklist	4%	10 min
Back Office Search Consumer	10%	10 min
Back Office Search Company	1%	10 min
View Billing Account	7%	10 min
View Case	8%	10 min
Create and Submit Quote	1%	10 min
Add New Order	4%	10 min
Add New Case	8%	10 min
Service Management Order	6%	10 min
Total	100%	

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	1,000 Users	4,250 Users
Open Common Worklist			
Open Common Worklist Display	1.622	1.639	1.261
Open Task Worklist			
Open Task Worklist Display Worklist	2.017	2.175	1.984
Open Task Worklist Display Task	1.667	1.716	1.559
Open Case Worklist			
Open Case Worklist Display Worklist	1.559	1.652	2.046
Open Case Worklist Display Case	1.663	1.800	2.134
Search Consumer			
Search Consumer Display Consumer	2.087	2.167	3.214
Search Company			
Search Company Display Company	1.595	1.727	2.012
View Billing Account			
View Billing Account Display 360degree1	2.448	2.503	3.697
View Billing Account Display View Billing Account	1.248	1.305	2.173
View Case			
View Case Display 360 Degree View	2.439	2.474	3.240
View Case Display View Case	1.870	2.077	2.509
Add Quote			
Add Quote Display 360 Degree View	2.282	2.551	3.433
Add Quote Display Add Quote	2.532	2.657	3.338
Add Quote Catalog Search Results	1.392	1.674	1.893
Add Quote Update Total	1.534	1.548	1.795
Add Quote Submit	2.718	3.614	5.934
Add Order			
Add Order Display 360 Degree View	2.266	2.703	3.755
Add Order Display Add Order	2.827	2.914	3.222
Add Order Catalog Search Results	1.588	1.634	2.138
Add Order Submit	2.783	3.406	5.197
Add Case			
Add case Display 360 Degree View	2.456	2.810	3.424
Add case Display Add Case	2.577	2.776	2.975
Add Case Save	1.952	2.726	4.039
Service Management Order			
Service Management Order Display 360 Degree View	2.613	2.600	3.456
Service Management Order Display	3.663	3.946	6.164
Service Management Order Submit	3.325	3.989	4.821
* Weighted Avg. Response	2.087	2.262	2.693
Transactions/minute	N/a	100	425

Table 2: Business Process Runtimes

The database and application servers were processing a total of ~425 business processes per minute at the peak load of 4,250 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 test.

**PeopleSoft CRM for Communications 8.9
using DB2 UDB for AIX on pSeries 650s
and 630s**

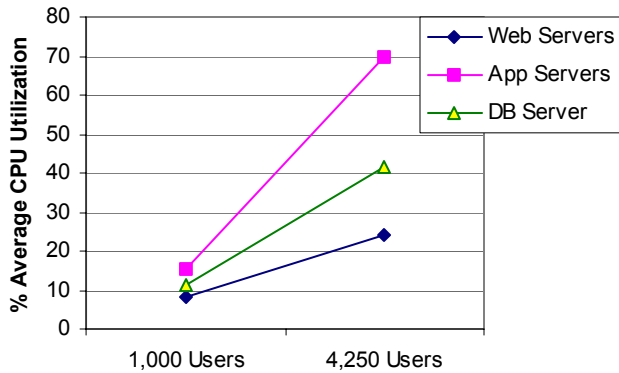


Figure 3: Average Server CPU Utilization

I/O SUBSYSTEM PERFORMANCE

An IBM TotalStorage DS4500 with six EXP700 drawers with 14 × 36.4 GB (15K) disks set up in RAID 5 configuration was used for the benchmark. I/O performance is crucial to system performance and is summarized in the following table.

Model Size	DB Server	Read MB/Sec	Write MB/Sec	Disk Transfer MB/Sec
DS4500 baseline	Average	946.26	306.197	254.22
	Peak	5533.4	820.2	348
DS4500 + SVC	Average	1288.6	318.2	297.2
	Peak	4222.9	1452.9	666.3

Table 4: I/O Performance

Note that the 4,250-user run was repeated with a SAN Volume Controller (SVC) in place for comparison.

DATA COMPOSITION DESCRIPTION

The standard database was comprised of:

Data Composition	Standard Medium Model
# of Consumers	5,000,000
# of Consumer Orders	10,000,000
# of Consumer Phones (2 each)	10,000,000
# of Consumer Addresses (2)	10,000,000
# of Consumer Email Addresses	10,000,000
# of Customer Companies	250,000
# of Customer Company Orders	250,000
# of Company Addresses (1)	250,000
# of Contacts (20 each)	5,000,000
# of Contact Addresses (1 each)	5,000,000
# of Contact Email Addresses	5,000,000
# of Contact Phones (2 each)	10,000,000
# of Workers	6,000
# of Cases	5,000,000
# of Service Orders	100,000
# of Solutions	200,000
# of Worklist Entries	15,000,000
# of Interactions	15,000,000
# of Installed Products	6,000,000
# of Products/Items	50,000
# Emails in an 8-hour Day	250,000
# of Correspondence Templates	125,000

Table 3: Data Composition

BENCHMARK ENVIRONMENT

HARDWARE CONFIGURATION

Database Server:

The IBM pSeries 650 (7038-6M2) server was used as the database server. It was equipped with the following:

- 8 × 1.45 GHz POWER4™ Processors, each with 32 Kilobytes of Level-1 Data Cache and 64 Kilobytes of Level-1 Instruction Cache, 0.75 Megabytes of Level-2 Cache, with an average of 16 Megabytes of Level 3 Cache
- 32 Gigabytes of Memory
- ~70 Gigabytes of total Disk Space (2×36.4 GB SCSI)
- 1 Disk Controllers (1 × SCSI)

The IBM pSeries 650 was attached to:

- One IBM TotalStorage DS4500 Storage Server

Application Server(s):

3 × IBM pSeries 650 (7038-6M2) servers were used as application servers. They were equipped with the following:

- 8 × 1.45 GHz POWER4 Processors, each with 32 Kilobytes of Level-1 Data Cache and 64 Kilobytes of Level-1 Instruction Cache, 0.75 Megabytes of Level-2 Cache, with an average of 16 Megabytes of Level 3 Cache
- 32 Gigabytes of Memory
- ~70 Gigabytes of total Disk Space (2×36.4 GB SCSI)
- 1 Disk Controllers (1 × SCSI)

1 × IBM pSeries 630 (7028-6C4) server was used as an application server. It was equipped with the following:

- 4 × 1.45 GHz IBM POWER4™ processors, each with 32 Kilobytes of Level-1 Data Cache and 64 Kilobytes of Level-1 Instruction Cache, 0.768 Megabytes of Level-2 Cache, with an average of 4 Megabytes of Level 3 Cache
- 16 Gigabytes of Memory
- ~70 Gigabytes of total Disk Space (2×36.4 GB SCSI)
- 1 Disk Controllers (1 × SCSI)

Web Server(s):

1 × IBM pSeries 630 (7028-6C4) server was used as a web server. It was equipped with the following:

- 4 × 1.45 GHz IBM POWER4™ processors, each with 32 Kilobytes of Level-1 Data Cache and 64 Kilobytes of Level-1 Instruction Cache, 0.768 Megabytes of Level-2 Cache, with an average of 4 Megabytes of Level 3 Cache
- 16 Gigabytes of Memory

1 × IBM pSeries 630 (7028-6C4) server was used as a web server. It was equipped with the following:

- 4 × 1.2 GHz IBM POWER4™ processors, each with 32 Kilobytes of Level-1 Data Cache and 64 Kilobytes of Level-1 Instruction Cache, 0.768 Megabytes of Level-2 Cache, with an average of 4 Megabytes of Level 3 Cache
- 16 Gigabytes of Memory

QuickTest Client PC:

IBM® NetVista with the following:

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

Load Simulation Driver(s):

1 × IBM xSeries model x440 4-way was used as a driver. It was equipped with the following:

- 4 × 2.8 GHz Intel® Xeon™ Processors MP, each with 1 Megabyte of Level-3 Cache
- 3.6 Gigabytes of Memory

1 × IBM Netfinity™ model 6000R 2-way was used as a driver. It was equipped with the following:

- 2 × 1000 MHz Intel® Pentium III Xeon™ Processors, each with 2 Megabytes of Level-2 Cache
- 3.6 Gigabytes of Memory

SOFTWARE VERSIONS

PeopleSoft CRM for Communications 8.9 (Order Capture, Support, Multichannel Communications, Billing & Account Management, Services Management)

PeopleTools 8.45

IBM DB2 Universal Database Version 8.1 for AIX w/FP 7 (64-bit)

IBM® AIX® 5L™ V5.2 64-bit (on the database server, application servers and web servers)

Microsoft® Windows® XP Professional w/SP 2 (on the drivers, driver controller and client)

IBM® WebSphere® Single Server Version 5.1 with JRE 1.4.1

Mercury Interactive LoadRunner® 7.8

Mercury Interactive QuickTest® Professional 6.5

BEA TUXEDO® 8.1

Microsoft Internet Explorer® 6.0

ICE/APRDs applied:

735295000	579632	See: Bundle 5 (12/21/2004)
1210244000	603622	
1103642000	598496	
1149430000	602797	

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