

# ORACLE'S PEOPLESOFT HRMS 9.1 FP2 SELF-SERVICE USING ORACLE DB FOR ORACLE SOLARIS (UNICODE) ON AN ORACLE'S SPARC M6-32 Servers

As a global leader in e-business applications, Oracle 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 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	PeopleSoft HRMS 9.1 FP2 Self-Service	
	Extra-Large Data Model	
	Average Response	Search 2.72 sec, Save 1.33 sec
	Concurrent Users	40,000

## BENCHMARK PROFILE

In January 2014, Oracle (PeopleSoft) conducted a benchmark in Burlington, MA to measure the online performance of Oracle's PeopleSoft Enterprise Human Resources Management System (HRMS) 9.1 on Oracle's M6-32 configured with one Physical domain of 8 sockets/chips. The Physical domain was configured with 2 Oracle VM for SPARC with 2 sockets (24 cores) for database domain and 6 sockets (72 cores) for Application and Web domain. The database domain was configured with Oracle11g™ R2 database running Solaris 11.1 SRU10.5. The application server and Web domain was configured with 2 Solaris Zones for PeopleSoft Application Server and one Solaris Zones for Weblogic server running Oracle Solaris 11.1 SRU10.5. Approximately 600 GB of storage (5.67 TB DB data on 2 × 2540-M2 + 2 × 2501) and 200 GB of storage (1.26 TB redo logs on X3-2L) was allocated to the database instance.

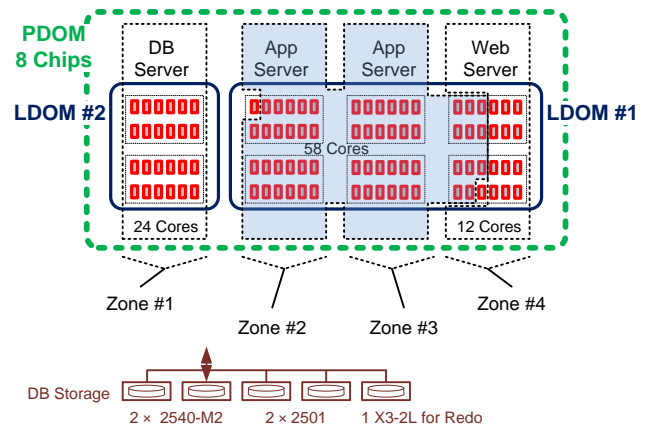
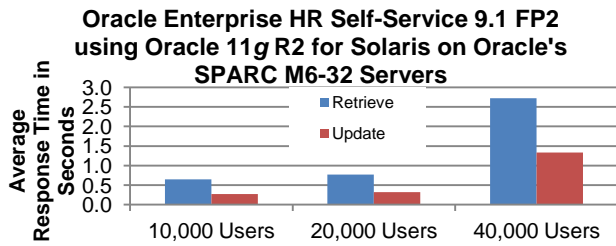


Figure 1: Virtualization Resource Apportionment

The benchmark measured client response times for 10,000, 20,000 and 40,000 concurrent users. The standard database composition model represents an extra-large-sized company profile. The testing was conducted in a controlled environment with no other applications running. **The goal of this Benchmark was to obtain baseline results for PeopleSoft HRMS 9.1 FP2 self-service transactions with Oracle Database for Solaris on Oracle SPARC M6 Servers.**

This report summarizing OLTP processing in HCM 9.1 FP2 on this particular hardware and software environment is one of three. Two complementary reports cover stand-alone batch and concurrent batch/OLTP results on this same environment for further performance analysis.



**Figure 2: Average Response Times**

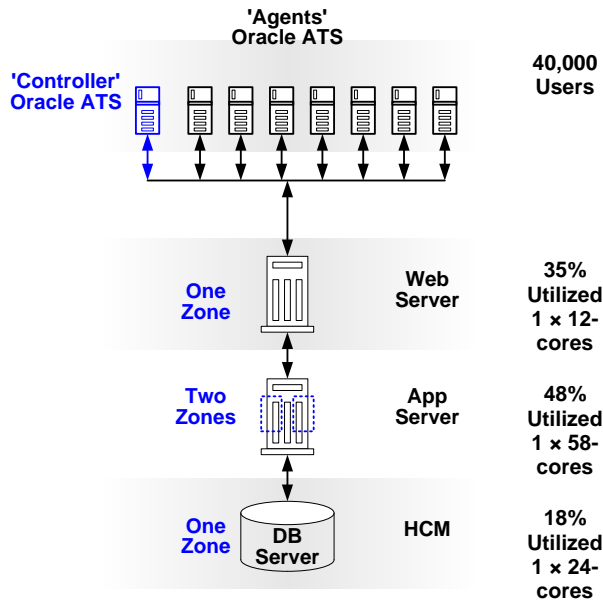
\* This average is weighted based on the business mix as reflected in Table 1: Business Process Mix.

## METHODOLOGY

Oracle® ATST™ was used as the load driver, simulating concurrent users. It submitted a business process at an average rate of one every five minutes for each concurrent user.

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

Figure 3 shows a typical 4-tier benchmark configuration.



**Figure 3: 4-Tier Configuration**

Load (search/retrieval) times were measured from the time the user clicks the <OK> button until all the data for the entire business transaction has been retrieved.

Update (save) times were measured from the time the user clicks the <SAVE> button until the system has released the page.

## BUSINESS PROCESSES

Oracle (PeopleSoft) defines a business transaction as a series of HTML pages that guide a user through a particular scenario, such as promoting an employee.

The fourteen PeopleSoft Enterprise 9.1 HRMS business processes tested in this benchmark are as follows:

### EMPLOYEE SELF-SERVICE

*eProfile*

**Update Home Address:** Update address in Personal Data section.

**Update Home Phone:** Update phone number in Personal Data section.

*eBenefits*

**View Benefits Summary:** View overall benefits enrollment data.

**Benefits Change Life:** View benefits and alter the beneficiaries' allocations in the Basic Life Plan.

*ePay*

**View Paycheck:** View current paycheck information.

**Update Direct Deposit Info:** Add a direct deposit directive.

**Employee Adds Profile Items:** Add competencies to personnel profile.

### MANAGER SELF-SERVICE

*eDevelopment*

**View Employee Info:** View job and personal information.

*eProfile*

**Initiate Termination:** Initiate a termination by recording an effective date and reason for termination.

**Initiate Promotion:** Initiate a promotion by entering a new job title and salary.

*eCompensation*

**Initiate Employee Salary Change:** Process a salary change for a single employee.

### HR ADMINISTRATION

**Add a Person:** Add a person and their biographical details.

**Hire a Person:** Enter the specified job data and work location, followed by the payroll and compensation details.

**Add a Job:** Add job details to an existing employee.

## ONLINE PROCESS RESULTS

The table below shows average retrieval (search) and update (save) times, in seconds, for each business process.

HRMS Process	% within Group	% Overall	Pacing in Min
<b>Employee Self-Service (60%)</b>			
Update Home Address	3%	1.8%	5
Update Phone Numbers	3%	1.8%	5
View Benefits Summary	10%	6%	5
Update Beneficiary	2%	1.2%	5
View Paycheck	78%	46.8%	5
Update Direct Deposit	2%	1.2%	5
Employee Adds Profile Items	2%	1.2%	5
<b>Manager Self-Service (20%)</b>			
View Employee Info	50%	10%	5
Initiate Termination	20%	4%	5
Initiate Promotion	10%	2%	5
Initiate Employee Salary Change	20%	4%	5
<b>HR Administrator (20%)</b>			
Add a Person	20%	4%	5
Hire a Person	40%	8%	5
Add a Job Row	40%	8%	5
Total		100%	5

**Table 1: Business Process Mix**

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

The database and application servers were processing a total of 8,000 business processes per minute at the peak load of 40,000 concurrent users. The estimated transaction rate is calculated by dividing the total number of concurrent users by the average pacing rate.

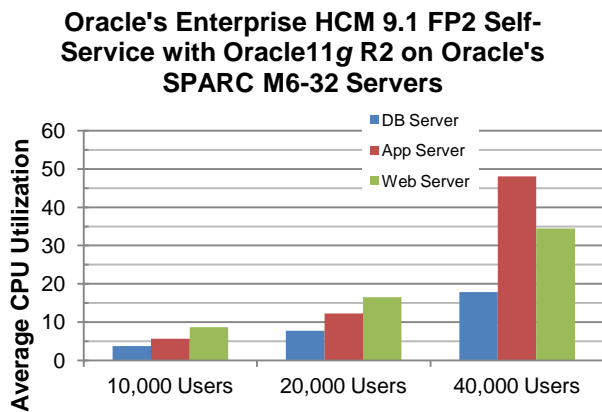
Performance may vary on other hardware and software platforms and with other data composition models.

Process		10,000 Users	20,000 Users	40,000 Users
Update Home Address	Search	0.615	0.705	2.836
	Save	0.575	0.701	2.637
Update Home Phone	Search	0.563	0.599	2.32
	Save	0.328	0.384	1.577
View Benefits Summary	View	0.615	0.712	2.697
Update Beneficiary	Search	0.599	0.7	2.665
	Save 1	0.137	0.114	0.648
	Save 2	0.16	0.154	0.718
	Edit/Calc	0.126	0.103	0.676
View Paycheck	Search	0.685	0.825	2.817
	View	0.428	0.542	1.895
Update Direct Deposit Info	Search	0.542	0.586	2.405
	Save	0.167	0.151	0.672
Employee Adds Profile Items	Search	0.495	0.531	2.274
	Save	0.672	0.777	3.076
	Submit	1.857	2.216	7.389
	Confirm	0.5	0.576	2.079
View Employee Info	Search	0.659	0.765	2.831
Initiate Termination	Search	0.641	0.74	2.807
	Save	0.163	0.162	0.789
	Confirm	0.163	0.158	0.736
Initiate Promotion	Search	0.648	0.806	2.956
	Save	0.426	0.572	1.877
Initiate Salary Change	Search	0.678	0.79	2.979
	Save	0.946	1.18	4.639
	Calc	0.247	0.29	1.226
Add a Person	Save	0.124	0.127	0.629
	Confirm	0.186	0.216	0.893
Hire a Person	Save 1	0.124	0.134	0.631
	Save 2	0.128	0.124	0.586
	Confirm	0.316	0.378	1.555
Add a Job	Search	0.438	0.515	2.017
	Save	0.231	0.295	1.287
	Confirm	0.159	0.161	0.893
* Average Search		0.644	0.764	2.725
* Average Save		0.272	0.320	1.331
Trans/min Est.		2,000	4,000	8,000

**Table 2: Employee/Manager Process Runtimes**

## SERVER PERFORMANCE

Figure 4 shows the average CPU utilization for each of the servers in this test. The CPU utilization is the average across all of the CPUs in each server.



**Figure 4: Average Server CPU Utilization**

% CPU	User	System	I/O Wait	Idle
<b>DB Server</b>				
40,000 Users	12.7	5.2	0	82.1
20,000 Users	5.4	2.4	0	92.3
10,000 Users	2.5	1.0	0	96.3
<b>App Server</b>				
40,000 Users	43.3	4.8	0	51.9
20,000 Users	10.8	1.6	0	87.7
10,000 Users	4.9	0.9	0	94.4
<b>Web Server</b>				
40,000 Users	29.5	5	0	65.5
20,000 Users	14.1	2.5	0	83.4
10,000 Users	7.4	1.2	0	91.3

**Table 3: Summary of CPU Utilization**

	10,000 Users	20,000 Users	40,000 Users
DB Server	789 GB	789 GB	789 GB
App Server	184 GB	206 GB	247 GB
Web Server	37 GB	38 GB	41 GB

**Table 4: Average Memory Utilization**

## I/O PERFORMANCE

Oracle's Sun Storage 2540-M2 Arrays with 2501 expansion trays were used for storage of tables, indexes and for undo logs. Oracle's Sun Server X3-2L with a SAS-2 RAID PCI-E HBA was used for storage of redo logs. Another Oracle's Sun Server X3-2L with Sun Flash Accelerator F40 PCI-E cards was used as a cache for application server objects. I/O performance is crucial to performance and is summarized as follows:

vUsers →	10,000	20,000	40,000
<b>DB</b>	<b>Average</b>	<b>Average</b>	<b>Average</b>
r/s	51.2	59.5	81.0
w/s	186.7	316.9	533.0
KB r/s	1561.9	1955.3	2636.9
KB w/s	1282.0	2059.5	3426.9
<b>App Server</b>			
r/s	2232.5	2555.1	2558.6
w/s	542.0	954.4	1987.0
KB r/s	62693.8	71532.5	74971.2
KB w/s	8551.5	15465.7	35446.4

**Table 5: I/O Metrics**

## DATA COMPOSITION DESCRIPTION

The standard database was comprised of:

- 500,480 Employees (8 per Department)
- 62,560 Managers
- 62,560 Department Table Entries

## BENCHMARK ENVIRONMENT

### HARDWARE CONFIGURATION (SPARC M6-32)

#### **Database Server:**

1 × Oracle Solaris Zone with 24 cores on an Oracle's SPARC M6-32 server was used as a database server. It was equipped with the following:

- 2 × 3.6 GHz SPARC™ M6 Twelve-Core processors each with 16 Kilobytes of Instruction and 16 Kilobytes of Data Level-1 on core cache, 128 Kilobytes of shared Instruction and Data Level-2 cache per core, and 48 Megabytes of Level-3 on-chip cache (24 cores total – 192 vcpus/threads)
- 1024 Gigabytes of Memory (~790 GB used at peak load) per LDOM
- 600 GB of DB data mirrored volume created using 2 × 2540-M2 + 2 × 2501 [48 × 300 GB 15k rpm SAS drives]
- 200 GB of DB redo log volume using 1 × Sun Server X3-2L [ 1 × 8-Port 6Gbps SAS-2 RAID PCI Express HBA, 12 × 3 TB 7.2K rpm SAS drives] with Oracle Solaris 11.1 (COMSTAR)

#### **Application Server(s):**

2 × Oracle Solaris Zones with 58 cores total on an Oracle's SPARC M6-32 server were used as the application servers. They were equipped with the following:

- 5 × 3.6 GHz SPARC™ M6 Twelve-Core processors each with 16 Kilobytes of Instruction and 16 Kilobytes of Data Level-1 on core cache, 128 Kilobytes of shared Instruction and Data Level-2 cache per core, and 48 Megabytes of Level-3 on-chip cache (60 cores total – 480 vcpus/threads)
- 2.5 Terabytes of Memory (~250 GB used at peak load)

In the application tier, 5 PeopleSoft domains with 350 application servers (70 per each domain) were hosted in the two separate Oracle Solaris Zones for a total of 10 domains with 700 application server processes.

The following storage was used:

- 1 × Sun Server X3-2L with 2 × Intel Xeon E5-2609 2.4GHz Processors, 16GB Memory,
- 1.6 TB of Application Server Object Caches created using 4 × Sun Flash Accelerator F40 PCIe 400GB cards
- Oracle Solaris 11.1 (COMSTAR)

#### **Web Server(s):**

1 × Oracle Solaris Zone with 12 cores on an Oracle's SPARC M6-32 server was used as the web server. It was equipped with the following:

(1 zone was configured with 32 Web Logic instances with 1 GB heap size.)

- 1 × 3.6 GHz SPARC™ M6 Twelve-Core processors each with 16 Kilobytes of Instruction and 16 Kilobytes of Data Level-1 on core cache, 128 Kilobytes of shared Instruction and Data Level-2 cache per core, and 48 Megabytes of Level-3 on-chip cache (12 cores total – 96 vcpus/threads)
- 512 Gigabytes of Memory (~42 GB used at peak load)

#### **Load Simulation Driver(s):**

1 × Sun Fire X4275 server was used as the load driver controller. It was equipped with the following:

- 2 × 2.53 Gigahertz Intel® Xeon™ 5500 Quad-Core Processors, each with 256 Kilobytes of Level-2 Cache per core (8 cores total)
- 64 Gigabytes of Memory

7 × Sun Server X3-2 servers were used as the load drivers. They were equipped with the following:

- 2 × 2.4 Gigahertz Intel® Xeon™ E5-2600 Eight-Core Processors, each with 256 Kilobytes of Level-2 Cache per core (16 cores total)
- 128 Gigabytes of Memory

## SOFTWARE VERSIONS

Oracle's PeopleSoft HRMS and Campus Solutions  
9.10.00.000 with FP 2

Oracle's PeopleSoft Enterprise (PeopleTools) 8.52.03

Oracle Database 11g 11.2.0.3.0 (64-bit)

Oracle Solaris 11.1 (11.1.10.5.2) (on the Database Server)

Oracle Solaris 11.1 (11.1.10.5.2) (on the App Server and Web  
Server)

Java Platform, Std. Edition Development Kit 6 with Update 32

Microsoft® Windows Server 2003 Enterprise Edition w/SP 2  
(on the Controller and Drivers)

Oracle ATS Load Test software 9.20.0370

Oracle (BEA) Tuxedo® 10.3.0.0 Patch Level 043 (64-bit)

Oracle WebLogic Server™ 11g (10.3.5)



### Oracle (PeopleSoft) Pleasanton

5815 Owens Drive

P. O. Box 8018

Pleasanton, California 94588-8618

Tel 925/694-3000

Fax 925/694-3100

Email [info@peoplesoft.com](mailto:info@peoplesoft.com)

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



Enterprise HRMS 9.1 on SPARC M6-32  
January 2014

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](http://oracle.com)



Oracle is committed to developing practices and products that help protect the environment

Copyright © 2014, Oracle and/or its affiliates. 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 and Java are registered trademarks of Oracle and/or its affiliates. Other names may be trademarks of their respective owners.

AMD, Opteron, the AMD logo, and the AMD Opteron logo are trademarks or registered trademarks of Advanced Micro Devices. Intel and Intel Xeon are trademarks or registered trademarks of Intel Corporation. All SPARC trademarks are used under license and are trademarks or registered trademarks of SPARC International, Inc. UNIX is a registered trademark licensed through X/Open Company, Ltd. 1010

**Hardware and Software, Engineered to Work Together**