PEOPLESOFT 8.8 ENTERPRISE PORTAL USING DB2 UDB FOR LINUX ON IBM® xSERIES Servers (With App Server Cache 'OFF')

As the world's leading provider of application software for the Real-Time Enterprise, PeopleSoft delivers high performance solutions that exceed our customers' expectations. Business software must deliver rich functionality with robust performance maintained at volumes representative of customer environments.

PeopleSoft benchmarks demonstrate our software's performance characteristics for a range of processing volumes with a specific platform configuration. Customers and prospects can use this information while planning 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 8.8 Enterprise Portal	
	Standard Data Volume Model	
(English)	Average Response	Login 1.33 sec, Searches 1.52 sec
	Concurrent Users	6,400
Référence d'exécution	PeopleSoft 8.8 Enterprise Portal	
	Norme modèle de données	
(Français)	temps de réponse	Login 1,33 sec, Searches 1,52 sec
	Concourants Utilisateurs	6.400
Benchmark-Test	PeopleSoft 8.8 Enterprise Portal	
	Datenbankmodell "Standard"	
(Deutsch)	Antwortzeit	Login 1,33 sek, Searches 1,52 sek
	Gleichzeitige Benutzer	6.400
Patrón de rendimiento	PeopleSoft 8.8 Enterprise Portal	
	Volumen Estándar de los datos	
(Español)	tiempo de reacción	Login 1,33 sec, Searches 1,52 sec
	Simultáneos Utilizadores	6.400

BENCHMARK PROFILE

In August 2004, PeopleSoft and IBM conducted a benchmark in Pleasanton, CA to measure the online performance of the PeopleSoft 8.8 Enterprise Portal configured to run an HR subsite as well as a Help Desk subsite within a Linux environment. PeopleSoft HRMS and CRM provided remote transaction execution as well as pagelet content. The implementation used IBM DB2® Universal Database Enterprise Server Edition Version 8.1 w/FP 4 for Linux on a 4-way IBM xSeries® 360 database server, running Red Hat® Linux® Advanced Server release 2.1AS/i686.

Two 8-way IBM xSeries 445 application servers and one 2-way IBM xSeries 335 application server and two 2-way x335 web servers also ran Red Hat Linux Advanced Server release 2.1AS/i686. The application servers disabled cache for this testing. Disk storage was run using an IBM TotalStorage™ FAStT600 Turbo with IBM EXP700 Expansion Units.

The benchmark measured the portal client response times for 6,400 concurrent users. The standard database composition model represents a medium-sized company profile. The testing was conducted in a controlled environment with no other applications running. The tuning changes, if any, were approved by PeopleSoft Development and are generally available. **The goal of this Benchmark was to obtain baseline results and to show application scalability for the PeopleSoft 8.8 Enterprise Portal accessing PeopleSoft HCM self-service applications with Linux.**

The figure below illustrates average load/search response times for a single user with 6,400 concurrent users.

PeopleSoft Enterprise Portal 8.8 using DB2 UDB for Linux on IBM xSeries Servers
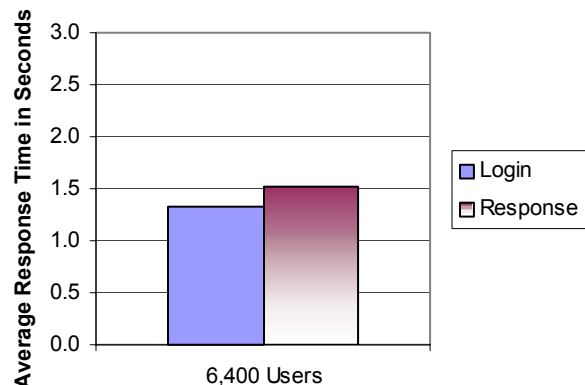
Figure 1: Average Response Times

ONLINE METHODOLOGY

Mercury Interactive's LoadRunner® was used as the load driver, simulating concurrent users. It submitted business processes at an average pacing of 10 minutes for each concurrent user.

Mercury Interactive's 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.

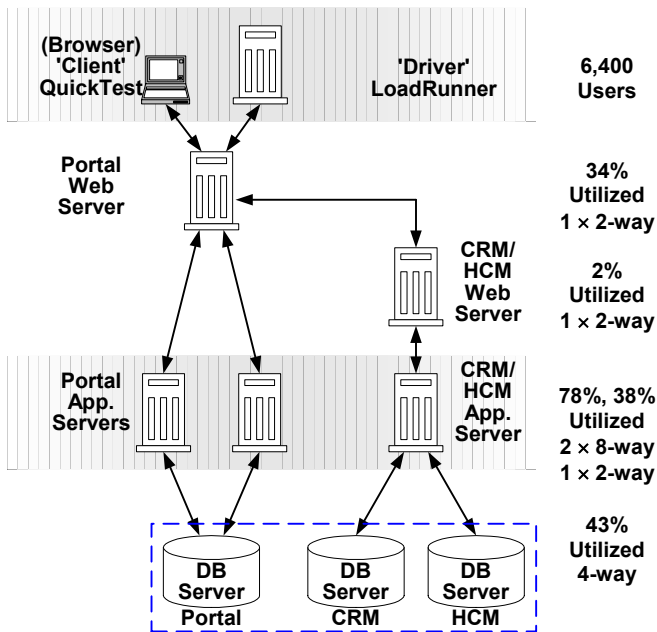Figure 2 shows this test's 4-tier benchmark configuration.

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.

The single Portal web server hosted four logical web servers. The single CRM/HCM web server hosted one CRM web server and one HCM web server. The Portal application servers hosted two domains apiece. The shared CRM/HCM application server hosted two domains; a single domain for each product.

PORTAL 'SELF-SERVICE' TRANSACTIONS

Login: Sign on with user logon id and password for the Enterprise Portal. Authentication of the user takes place, and the default homepage is displayed. Note that this is the starting point for all of the tested transactions.

User Profile: After sign on, navigate to the user profile page within the main portal site. (4 pagelets after sign on)

Company News: After sign on, click on a company news article. Return to the portal homepage. Click on another company news article. Click home. (4 pagelets after sign on)

Resource Finder: After sign on, click on 'Resource Finder' in the portal header. Search for a person in the Resource Finder pagelet. Select a profile from the results. Select the person's manager from the profile page. Select another profile from the manager's profile page. (4 pagelets after sign on)

Search for Content: After sign on, enter the search word in the portal header. Search for the content that is in the top portal header. Select content from the search results' page. (4 pagelets after sign on)

CRM 'SELF-SERVICE' TRANSACTIONS

Select Case: After sign on, navigate to the CRM sub-site, which has three pagelets. Click on a case-id hyperlink from Self Service Help Desk to display the case details. (4 pagelets after sign on)

New Case: After sign on, navigate to the CRM sub-site, which has three pagelets. Select 'Create New Case' hyperlink from Self Service Help Desk. Select the Business Unit, Product, Problem Type, etc. Enter a summary, and submit the case. (4 pagelets after sign on)

HCM 'SELF-SERVICE' TRANSACTIONS

Paycheck Inquiry: After sign on, click on the 'view-paycheck' inquiry link from the shortcut collection and pull up a paycheck inquiry. (4 pagelets after sign on)

View Benefits: After sign on, click on the Benefits Enrollment link from the shortcut pagelet. (4 pagelets after sign on)

View Benefits (Kiosk User): After sign on, click on the Benefits Enrollment link from the shortcut pagelet. This type of user had not logged on before—no benefit from browser side caching, unlike the five transactions above where the user had logged on before. (4 pagelets after sign on)

Process	% of Users	Pacing	Pagelets on Home Page
Company News	5%	10 min	4
User Profile	10%	10 min	4
Resource Finder	10%	10 min	4
Search for Content	20%	10 min	4
View Benefits	10%	10 min	4
View Benefits (Kiosk)	15%	10 min	4
View Paycheck	20%	10 min	4
Select Case	5%	10 min	4
Add Case	5%	10 min	4
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. The pacing for each transaction is also shown.

The database and application servers were processing a total of 640 business processes per minute at the peak load of 6,400 concurrent users. The transaction rate is calculated by dividing the total number of concurrent users by the average pacing rates.

The Enterprise Portal was configured and implemented to leverage the newest features within Enterprise Portal 8.8, such as Site Management, role-based Branding, Resource Finder, and Shortcut Collections.

PeopleSoft partner IBM chose to disable the application server cache for this test; and believes that this improves performance.

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

ONLINE PROCESS RESULTS

The table below shows average retrieval (load) times, in seconds, for each business process.

Business Process	6,400 Users
Company News	
User Login	1.000
View News Article 1	1.163
Portal Home 1	0.578
View News Article 2	1.320
Portal Home 2	0.548
User Profile	
User Login	1.264
View Profile	1.275
Resource Finder	
User Login	1.677
Search for Employee	3.336
Employee Profile	1.697
Employee's Manager Profile	1.858
Another Manager Profile	1.743
Search for Content	
User Login	1.241
Select from Header	1.218
Select from Sub-Site	1.555
View Benefits	
User Login	1.063
View Benefits	1.114
View Benefits (Kiosk)	
User Login	1.612
View Benefits	1.199
View Paycheck	
User Login	1.089
View Paycheck	1.776
Select Case	
User Login	1.652
Select Case	1.660
Add Case	
User Login	1.743
New Case	
Product	
Submit	0.979
Average Login	1.328
Searches and Saves	1.518
Approx. Transactions/minute	640

Table 2: Business Process Runtimes

SERVER PERFORMANCE

Figure 3 shows the average CPU utilization for each of the servers in this test.

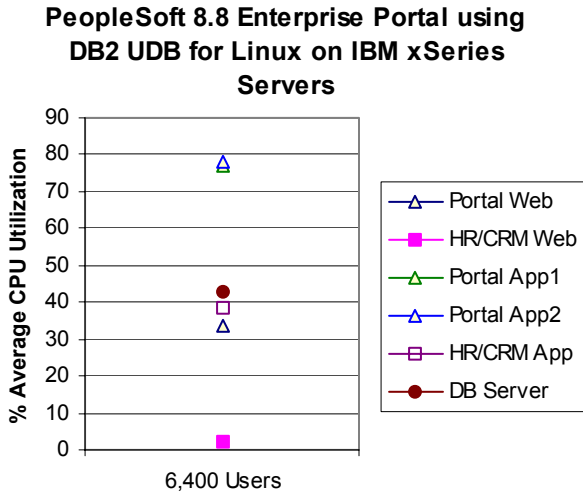**PeopleSoft 8.8 Enterprise Portal using DB2 UDB for Linux on IBM xSeries Servers**

Figure 3: Server Performance

I/O PERFORMANCE

The PeopleSoft 8.8 Enterprise Portal Benchmark for a 6,400 Concurrent User run was run using an IBM TotalStorage FAStT600 Turbo with IBM EXP700 Expansion Units. The FAStT used 23 disks of 36.4 GB, set up in RAID 5 configuration. I/O performance is crucial to system performance and is summarized in the table below:

		Average	Peak
Total Transfers per Second		73.16	90.2
Total Read Requests per Sec		32.38	45.7
Total Write Requests per Sec		31.92	46.4
512K Blocks Read per Sec		721.66	1036.8
512K Blocks Written per Sec		383.26	444.8

Table 3: Data Model Details

DATA COMPOSITION DESCRIPTION

The standard database was comprised of information on 200,000 employees in the Portal, CRM and HCM databases.

Portal Content Data Comp	Medium Model
Portal Registry	
Sites (unique branding per site)	40
Folder References Per Site	25
Content References Per Folder	15
Enterprise Portal Pagelets on homepage – menu, company news, shortcut collection pagelet to Benefits enrollment, resource finder	4
HRMS Pagelets on portal homepage – e.g. absence summary	5
HR specific co-branding on HR subsite. Pagelets on HRMS subsite: menu, Benefits enrollment shortcut collection pagelet, Published content from content management talking about benefits enrollment.	3
CRM Data	
Contacts	750,000
Relationships per Contact	5
Cases	310,000
Work Lists	280,000
Employees	250,000

Table 4: Data Model Details

BENCHMARK ENVIRONMENT

HARDWARE CONFIGURATION

Database Server (Portal,CRM,HCM):

The IBM Series 360 4-way was used as the database server. It was equipped with the following:

- 4 × 2.8 GHz Intel® Xeon™ MP Processors, each with 2 Megabytes of Level-3 Cache (Note that HyperThreading™ was used to make this box look, and act, like an 8-way)
- 8 Gigabytes of Memory
- ~600 Gigabytes of total Disk Space [IBM® TotalStorage™ FAStT 600 Turbo 'RAID 5 arrays'] ~112 GB used
- 2 Disk Controllers (1 × SCSI, 1 × 1 Gbit Fibre Channel)

The x360 database server was connected to an IBM TotalStorage FAStT600 Storage Server with Turbo feature using 36.5 GB 15K Drives and:

- 2 Gigabytes of Cache
- 2 GB Fibre Channel
- 2 Storage Controllers

Application Servers (Portal):

2 × IBM xSeries 445 8-ways were used as the application servers. They were equipped with the following:

- 8 × 2.8 GHz Intel® Xeon™ MP Processors, each with 2 Megabytes of Level-3 Cache, and an average of 16 Megabytes of XceL4™ Level-4 server accelerator Cache (64 MB total per SMP Expansion Module–that is, per 4-way module)
- 8 Gigabytes of Memory
- ~32 Gigabytes of total Disk Space
- 1 × Disk Controller

Application Server (CRM,HCM):

One IBM xSeries 335 2-way was used as the application server. It was equipped with the following:

- 2 × 3.06 GHz Intel® Xeon™ Processors, each with 512 Kilobytes of Level-3 Cache (Note that HyperThreading™ was used to make this box look, and act, like a 4-way)
- 4 Gigabytes of Memory
- ~32 Gigabytes of total Disk Space
- 1 × Disk Controller

Web Server (Portal):

One IBM xSeries 335 2-way was used as the web server. It was equipped with the following:

- 2 × 3.06 GHz Intel® Xeon™ Processors, each with 512 Kilobytes of Level-2 Cache (Note that HyperThreading™ was used to make this box look, and act, like a 4-way)
- 4 Gigabytes of Memory
- ~32 Gigabytes of total Disk Space
- 1 × Disk Controller

Web Server (CRM,HCM):

One IBM xSeries 335 2-way was used as the web server. It was equipped with the following:

- 2 × 3.06 GHz Intel® Xeon™ Processors, each with 512 Kilobytes of Level-2 Cache (Note that HyperThreading™ was used to make this box look, and act, like a 4-way)
- 4 Gigabytes of Memory
- ~32 Gigabytes of total Disk Space
- 1 × Disk Controller

Load Simulation Driver(s):

1 × IBM xSeries 440 4-way was used as a driver. It was equipped with the following:

- 4 × 1.5 GHz Intel® Xeon™ MP Processors
- 3.5 Gigabytes of Memory

1 × IBM xSeries 255 2-way was used as a driver. It was equipped with the following:

- 2 × 1.6 GHz Intel® Xeon™ MP Processors
- 4 Gigabytes of Memory

Load Driver Controller:

1 × IBM SERASSLT x86-based PC workstation was used as a controller. It was equipped with the following:

- 2 × 700 Megahertz Pentium® III Processors, each with 512 kilobytes of Level-2 Cache
- 3.5 Gigabytes of Memory

Client PC:

Hewlett-Packard® d530C workstation with the following:

- 1 × 2.66 Gigahertz Intel® Pentium® 4 Processor, with 512 kilobytes of Level-2 Cache
- 1 Gigabyte of Memory

SOFTWARE VERSIONS

PeopleSoft 8.8 Enterprise Portal

PeopleSoft 8.8 CRM

PeopleSoft 8.8 HCM

PeopleTools 8.44

IBM DB2 Universal Database Enterprise Server Edition Version 8.1 w/FP 4 for Linux (32-bit)

Red Hat Linux Advanced Server release 2.1AS/i686 (on the database server, application servers and web servers)

Microsoft® Windows 2000 Professional (on the drivers and driver controller)

Microsoft Windows XP Professional (on the client)

Mercury Interactive's LoadRunner 7.51 w/SP 1

Mercury Interactive's QuickTest Professional 6.5

IBM WebSphere 5.1.0

PeopleSoft.

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