



PEOPLESOFT ENTERPRISE BUDGETING 8.8 USING ORACLE9i ON HEWLETT- PACKARD PA-RISC & PROLIANT SERVERS

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.

BENCHMARK PROFILE

In May 2004, PeopleSoft conducted a benchmark in Pleasanton, CA to measure the batch and online performance of PeopleSoft Enterprise Budgeting 8.8 using Oracle9i™ 9.2.0.4 on a 4-way hardware partition (npar) of a Hewlett-Packard® HP9000 rp8420 database server, running Hewlett-Packard® HP-UX 11.i. An 8-way npar of the rp8420 used as an application server and a 2-way Hewlett-Packard® HP9000 rp3410 used as a web server also ran HP-UX 11.i. A 4-way Hewlett-Packard® ProLiant® DL580 G2 server was used as a BAM database server and two 2-way Hewlett-Packard® ProLiant® DL380 G3 servers were used as BAM logic servers. Each ProLiant server ran Microsoft® Windows 2000 Advanced Server.

The benchmark measured batch-processing time for extracting financial budget data to populate the Business Analysis Modeler (BAM) database. In addition, client response times for typical budgeting functions were measured for a single user, and for 100 and 250 concurrent users.

The testing was conducted in a controlled environment with no other applications running. **The goal of this Benchmark was to obtain results for PeopleSoft Enterprise Budgeting 8.8 with Oracle9i on HP servers.**

BATCH RESULTS

Process (2,000 Departments)	Elapsed Time
Data Staging	80 min
Publish Budgeting Model	160 min
Refresh Model Security (Update Users)	21 min
Full Model Recalculation	112 min
Full Data Extract	36 min
Total in Minutes	409 min
Total in Hours	6.82 hr

Table 1: Batch Business Process Runtimes

ONLINE RESULTS

	Single User	100 Users	250 Users
Line Item Budgeting			
Check out Line Item Budgeting	9.339	12.811	16.405
Click Line Item Details	2.443	2.451	2.885
Save new line item	2.163	2.538	2.918
Change line item method to ECODRV	2.019	2.117	2.419
Save modified line item	1.706	2.034	2.210
Choose a hyperlink to a total line amount	1.492	1.498	1.553
Click on the Spread button	0.632	0.643	0.630
Save adjusted line item	2.164	2.346	2.667
Check in Line Item Budgeting	0.722	1.122	1.116
Version Copy			
Copy Base to Version 1	16.859	20.696	26.858
Position Budgeting			
Check out Position Budgeting	3.879	5.397	8.340
Save modified position	2.196	2.262	2.869
Save new position	2.607	2.820	3.362
Check in Position Budgeting	0.613	0.825	1.261
Line Item Inquiry			
Run online inquiry	8.359	9.095	11.630
Asset Budgeting			
Check out Asset Budgeting	4.074	5.387	7.257
Save new asset	1.264	1.201	1.477
Check in Asset Budgeting	0.639	0.791	1.121
Transactions per min		20	52
Transactions per hour		1,250	3,125

Table 2: Online Business Process Response Times

BATCH METHODOLOGY

The PeopleSoft Budgeting 8.8 processes are designed to consolidate and publish disparate budget-model data into a single location for planning and reporting.

This application was run single threaded, although the 'Full Model Recalculation' and the 'Full Model Data Extraction' processes spawn multiple jobs during execution.

Batch processes are background processes, requiring no operator intervention or interactivity. Results of these processes are automatically logged in the database. The runtimes are posted to the Process Request database table where they are stored for subsequent analysis.

Data Staging [AE]: This process stages the budgeting data in preparation for publishing to the PeopleSoft BAM model. The process contains steps to summarize, convert and validate ChartFields' values. The process also flips the sign of the transaction amount and converts source transaction amount to entry currency if source transaction currency is not defined on the model.

Publish Budgeting Model [AE]: This process publishes staged data onto the PeopleSoft BAM Model. The data published becomes the base version. An identical working version from the base version is also created at the budget preparation 'user' level. A full model recalculation is executed at the end of the Publish process.

Refresh Model Security (Update Users) [AE]: This process populates the security settings onto the PeopleSoft BAM model when new users are added, user security definition is changed or new budget centers are added.

Full Model Recalculation [AE]: This process performs formula calculation based on all data in the model. It also synchronizes new ChartField combinations from the Position distribution and Asset distribution onto Line Item budgets. If the new ChartField combination involves other budget centers, the new ChartField combination would be generated to all working versions of the target budget centers.

Full Data Extract [AE]: This process extracts budgeting data from the PeopleSoft BAM Model to the reporting tables based on the criteria entered.

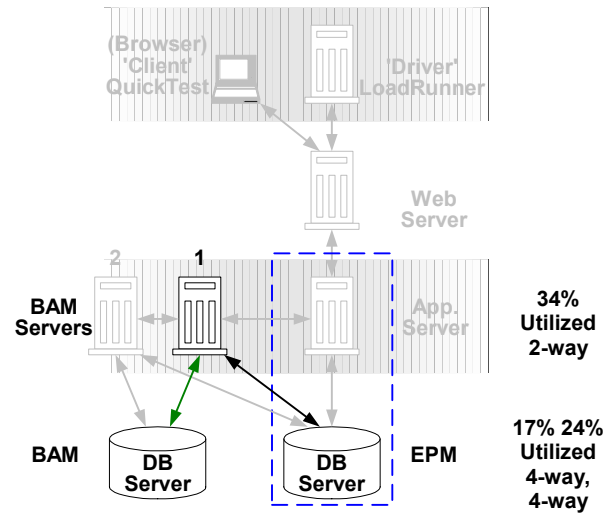


Figure 1: Budgeting Batch Test Implementation

The Budgeting implementation includes a Business Analysis Modeler (BAM) server (Figure 1). It is used by the Budgeting application as a multi-dimensional data store (via relational database), an analytic engine, and a reporting tool.

ONLINE METHODOLOGY

Mercury Interactive’s LoadRunner® was used as the load driver, simulating concurrent users. It submitted a business process at average rate, specified in Table 3, 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.

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

BUSINESS PROCESSES

PeopleSoft defines a business transaction as a series of HTML pages that guide a user through a business process, such as reviewing line items in a projected budget.

The PeopleSoft Enterprise Budgeting 8.8 business processes tested in this benchmark are as follows:

Line Item Budgeting: Navigate to the budget preparation ‘user’ “work items” page and select a budget center. Check out a working version of line item budgeting. Select a public view to filter the budgeting method amount. View the line item details and save a new item. Change a line item method to economic driver (ECODRV) and save that line after selecting a driver base ledger. Make an adjustment on the same line item. Finally, check in the version of the budget.

Version Copy: Navigate to the budget preparation ‘user’ “work items” page. Select a budget center and make a copy of the budget from Base version to Version 1.

Position Budgeting: Navigate to the budget preparation ‘user’ “work items” page and select a budget center. Check out a working version of position budgeting. View all the positions of the budget center, select one position and change the job code and save the position. Then save a new position. Finally, check in the version of the budget.

Line Item Inquiry: Navigate to the comparative analysis inquiry page and fill in inquiry criteria. Run the online inquiry.

Asset Budgeting: Navigate to the budget preparation ‘user’ “work items” page and select a budget center. Check out a working version of asset budgeting. Save a new asset and then check in the version of the budget.

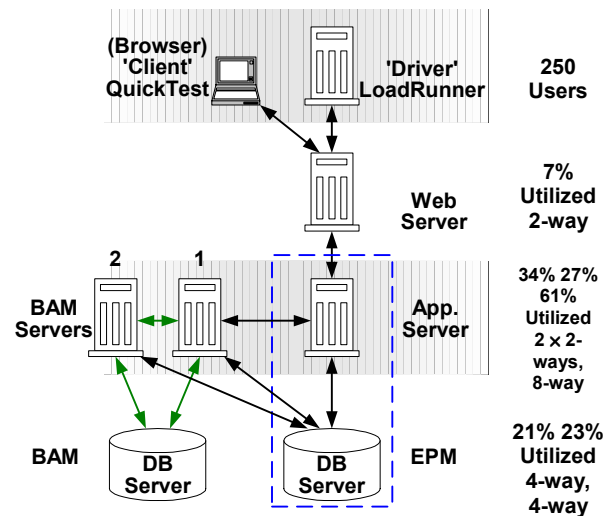


Figure 2: Four-Tier Online Test Implementation

Transaction	Percent of Total	Average Pacing (Minutes)
Line Item Budgeting	45%	4 min
Version Copy	5%	60 min
Position Budgeting	25%	6 min
Line Item Inquiry	10%	6 min
Asset Budgeting	10%	3 min
Check Out/Check In Budget	5%	15 min
Total	100%	

Table 3: 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.

See Table 2 on the first page for a summary of the online results.

The database and application servers were processing a total of 52 business processes per minute at the peak load of 250 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.

SERVER PERFORMANCE

Figures 3 and 4 show 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.

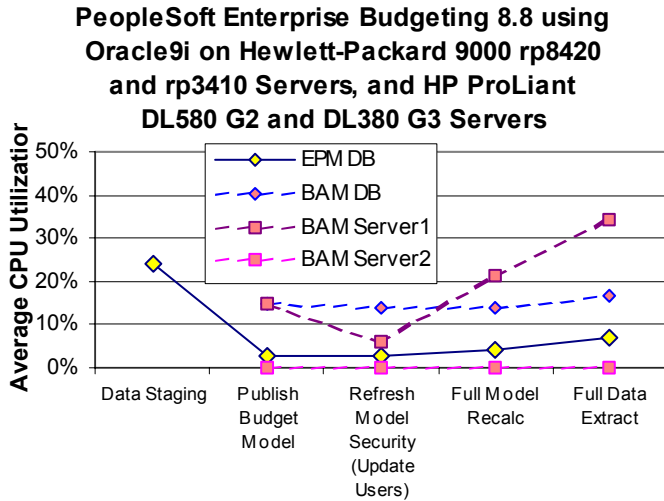


Figure 3: Average Batch Server CPU Utilization

The batch processes were single-threaded and primarily represent the efforts of a single CPU. Consequently, the overall CPU utilization for each server is low.

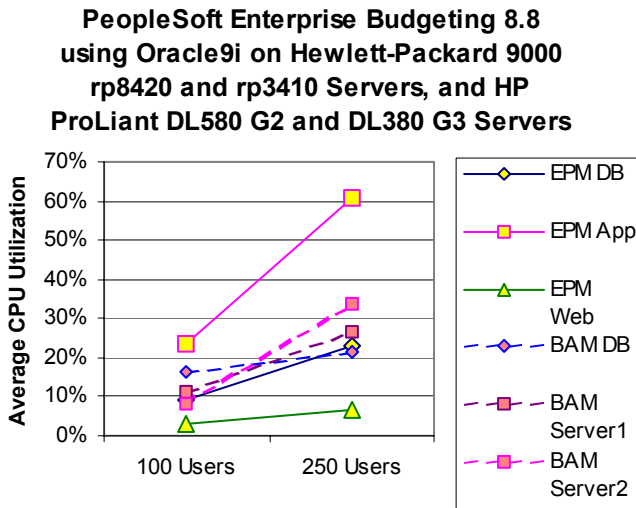


Figure 4: Average Online Server CPU Utilization

DATA COMPOSITION DESCRIPTION

The database was comprised of:

Number of members for delivered/required dimensions	
Line Item Budgeting	
Business Units	1
Departments	2,000
Accounts	250
Currencies	2
Scenario	5
Periods	12
Versions	2
Sparsity of dimensions per department	
Departments	100%
Accounts	10%
Currencies	50%
Number of additional dimensions	
Avg no of members for additional dimensions	10
Sparsity of additional dimensions	
	20%
Total number of dimensions	
	8
Total number of dimension members	
	2,284
Number of "Line items" per department per version	
	50
Number of "Line items" (excluding time) per version	
	100,000
POSITION BUDGETING	
Departments	2,000
Accounts	3
Currencies	1
Employees	20,000
Number of additional dimensions	
	1
Avg no of members for additional dimensions	
	10
ASSET BUDGETING	
Departments	2,000
Accounts	2
Currencies	1
Assets	50,000
Number of additional dimensions	
	1
Avg no of members for additional dimensions	
	10

Table 4: Data Model Characteristics

BENCHMARK ENVIRONMENT

HARDWARE CONFIGURATION

Database Server:

A 4-way hardware partition of a Hewlett-Packard® HP9000 rp8420® server was used as the database server. It was equipped with the following:

- 4 × 1 GHz PA-8800® processors, each with 1.5 MB of Level-1 Cache, 32 MB combined Level-2 Cache, and 3 MB of Level-3 Cache
- 32 Gigabytes of Memory
- 1 SAN-Connected HP StorageWorks XP128 disk array with 2 fibre-channel connections
- ~9 Terabytes of total Disk Space available (128 × 73.4 GB disk drives), approximately 650 GB of RAID 0/1 storage available for this benchmark (~200 GB used)
- 2 × Hewlett-Packard® Tachyon™ Fibre Channel Disk Controllers connected via two HP 2Gb Fibre Channel 16B switches

Application Server:

An 8-way hardware partition of a Hewlett-Packard® HP9000 rp8420® server was used as the application server. It was equipped with the following:

- 8 × 1 GHz PA-8800® processors, each with 1.5 MB of Level-1 Cache, 32 MB combined Level-2 Cache, and 3 MB of Level-3 Cache
- 32 Gigabytes of Memory
- ~146 Gigabytes of total Disk Space (2 × 73.4 GB)

Web Server:

1 × Hewlett-Packard® HP9000 rp3410® server was used as the web server. It was equipped with the following:

- 2 × 800 MHz PA-8800® processors, each with 1.5 MB of Level-1 Cache, 32 MB combined Level-2 Cache, and 3 MB of Level-3 Cache
- 16 Gigabytes of Memory
- ~72 Gigabytes of total Disk Space (2 × 36.4 GB)

BAM DB Server:

1 × Hewlett-Packard® ProLiant® DL580 G2 server was used as the BAM database server. It was equipped with the following:

- 4 × 1.9 GHz Intel® Xeon™ MP Processors, each with 512 Kilobytes of Level-2 Cache, 1 Megabyte of Level-3 Cache
- 3.62 Gigabytes of Memory
- Internal SmartArray 5i+ with ~70 Gigabytes of total disk space (2 × 36 GB -- RAID1+0 OS & Swap) (2 × 36 GB -- RAID1+0 Executables)
- HP StorageWorks 6304 Enclosure with ~250GB of total disk space (10 × 36GB – RAID1+0 Database) (4 × 36GB – RAID 1+0 Log)

Bam Server(s):

2 × Hewlett-Packard® ProLiant® DL380 G3 servers were used as the BAM servers. They were equipped with the following:

- 2 × 3.2 GHz Intel® Xeon™ Processors, each with 512 Kilobytes of Level-2 Cache, 1 Megabyte of Level-3 Cache
- 3.72 Gigabytes of Memory
- Internal SmartArray 5i+ with ~70 Gigabytes of total disk space (2 × 36 GB -- RAID1+0 OS & Swap) (2 × 36 GB -- RAID1+0 Executables)

Load Simulation Driver:

1 × Hewlett-Packard® ProLiant® 8000 was used as the driver. It was equipped with the following:

- 4 × 550 Megahertz Pentium® III Processors, each with 256 Kilobytes of Level-2 Cache
- 2 Gigabytes of Memory

Client PC:

Hewlett-Packard® Evo D510 desktop (DG767A) with the following:

- 1 × 2.4 GHz Intel® Pentium® IV Processors, each with 512 Kilobytes of Level-2 Cache
- 1 Gigabyte of Memory

SOFTWARE VERSIONS

PeopleSoft Enterprise (EPM) Budgeting 8.8 w/SP 2

PeopleTools 8.44

Oracle9i™ 9.2.0.4

Hewlett-Packard® HP-UX® 11i (11.11) Enterprise Edition
w/Dec 2003 Gold Bundle (on the database server,
application server and web server)

Microsoft® Windows 2000 Advanced Server 5.0 Build 2195
w/SP 4 (on the BAM DB server, BAM servers, the driver
and client)

Mercury Interactive's LoadRunner® 7.5

Mercury Interactive's QuickTest® Professional 6.0

BEA Tuxedo® 6.5 with Jolt 1.2

BEA WebLogic Server™ 6.10 w/SP 2

The logo for PeopleSoft, featuring the word "PeopleSoft" in a blue, serif font. The "P" is significantly larger than the other letters, and the "S" is also larger than the "o" and "f".

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>

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