



PEOPLESOFT 8.8 GLOBAL PAYROLL (JAPAN) USING ORACLE9i ON A SUN MICROSYSTEMS' SUN FIRE™ V480

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 Global Payroll 8.8 (Japan)	
(English)	10,000 Payees	
	# Minutes to Process	10.21minutes
	Payees per Hour	58,766 per hour
	50,000 Payees	
	# Minutes to Process	51.90 minutes
	Payees per Hour	57,803 per hour
ベンチマークテスト	PeopleSoft グローバルペイロール 8.8 (日本)	
(日本語)	受給者数: 10,000	
	処理時間	10.21分
	一時間当たりの処理人数	58,766 名/時間
	受給者数: 50,000	
	処理時間	51.90 分
	一時間当たりの処理人数	57,803 名/時間

Note that the summary above includes the processing times for the 'identify,' 'calculate' and 'finalize' payroll processes.

BENCHMARK PROFILE

In January 2004, PeopleSoft conducted a benchmark in Pleasanton, CA to measure the batch performance of the [Employee] Identification, [Payroll] Calculation, Finalize, Banking, Payslip, and Social Insurance processes in PeopleSoft Global Payroll 8.8 (Japan) with Oracle9i™ 9.2.0.4.

We used a Sun Microsystems' Sun Fire™ V480 (4-way) database server. The V480 utilized the Solaris™ 9 Operating Environment (OE).

The benchmark measured 'Global Payroll' application business process runtimes for two database models representing small and medium-sized organizations. Testing was conducted in a controlled environment with no other applications running. The tuning changes, if any, were approved by PeopleSoft Development and will be generally available in a future release or update. **The goal of this Benchmark was to obtain reference performance results for PeopleSoft Global Payroll 8.8.**

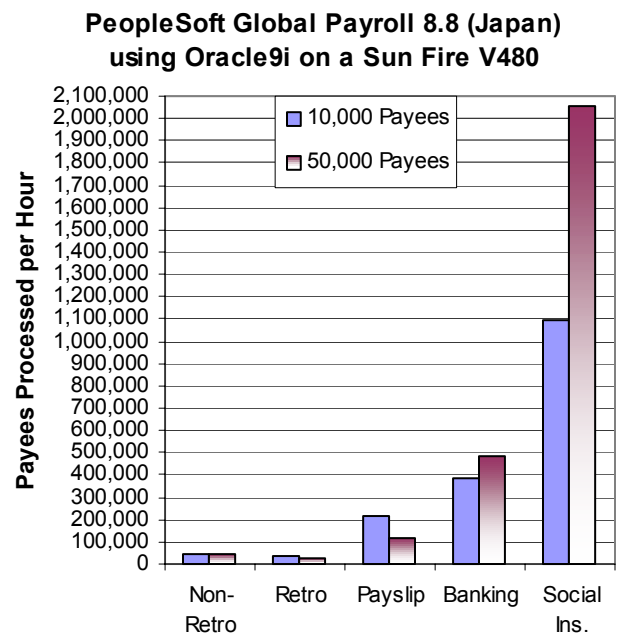


Figure 1: PeopleSoft Global Payroll 8.8 Processing Rates

The "Non-Retro" and "Retro" throughput rates above include the Identification, Calculate, Finalize and Payslip processes.

METHODOLOGY

PeopleSoft Global Payroll 8.8 batch processes can be initiated from a browser. For this benchmark, all runs used a browser to initiate COBOL, Application Engine (AE) or SQR jobs.

The Identify, Calculation and Banking processes were run as 8 concurrent processes—based upon the employee ID number ranges. The Banking process is run partly single-threaded and partly as parallel concurrent jobs.

Business Process	Job Streams	Process Type
Identify	8	COBOL
Calculate	8	COBOL
Finalize	Single-Threaded	COBOL
Payslip	Single-Threaded	AE & SQR
Banking	8 Single-Threaded	App Engine & SQR
Social Insurance	Single-Threaded	App Engine

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.

BUSINESS PROCESSES

The PeopleSoft Global Payroll 8.8 processes tested are as follows:

[Employee] Identification: (COBOL) Identifies eligible payees for the selected Calendar period. The process looks at the Calendar selection criteria and then compares this to the employee's pay system flag (JOB.PAY_SYSTEM_FLG), pay group (JOB.GP_PAYGROUP), and status (JOB.EMPL_STATUS). When applicable, it also looks at Positive Input information as well as Retro Triggers. The Identification process can be run separately from the other two tasks, usually right before the first calculation is run.

[Payroll] Calculation: (COBOL) Looks at identified payees and performs appropriate payroll calculations for those employees. Payroll Calculation can be run any number of times throughout the pay period. The first run will do most of the processing, while each successive run updates only the calculated totals of changed items. This iterative design minimizes the time required to calculate a payroll run, as well as the processing resources required. In this benchmark, Payroll Calculation was run only once, as though at the end of a payroll period.

Finalize: (COBOL) Takes the information generated by Calculation and 'closes' the period. Finalize can only be run once, and therefore, must be run at the end of the pay period.

Payslip: (AE & SQR) Provides payroll information at the employee-level, allowing the employee to view their net pay.

Banking: (AE & SQR) Setup to prepare for the creation of a single entity for each payroll result that needs to be 'paid out,' in an interface table. The table keeps all of the information required to execute the payment (net payment and external deductions). This process generates a flat file for Electronic File Transfer purposes.

Social Insurance: (AE) A process specific to Japan used to load and update monthly remuneration.

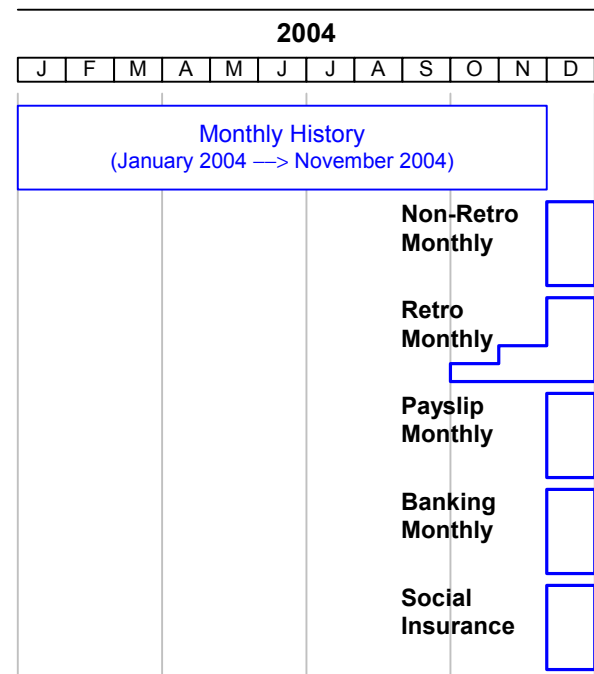


Figure 2: History and Execution Plan

Figure 2 summarizes the periods used in the creation of historical data and the corresponding execution periods. Eleven months of history were created and then the year-end payroll calculations were performed.

The monthly payroll with retroactivity was the only process involving more than a single (monthly) pay period. In this case, 23% of the payees had their payroll recalculated for one previous period, and another 23% had their payroll recalculated for two previous periods.

BATCH RESULTS

Tables 1a and 1b contain the actual runtimes, in minutes, for the Global Payroll processes.

10,000 Payees	Payroll – Not Including Retroactivity			Payroll - Including Retroactivity		
Process Tested	# Min. to Process	# Payees Processed per Hour	# Segments Processed per Hour	# Min. to Process	# Payees Processed per Hour	# Segments Processed per Hour
Payroll						
Identify	0.63	952,381	←	1.07	560,748	947,664
Calculate	9.40	63,830	←	13.13	45,697	77,228
Finalize	0.18	3,333,333	←	0.22	2,727,273	4,609,091
Payroll SubTotal:	10.21	58,766	←	14.42	41,609	70,319
Payslip						
Payslip Subtotal	2.82	212,766	←	2.83	212,014	358,304
Payroll + Payslip Totals	13.03	46,048	←	17.25	34,783	58,783
Banking						
Calculate	0.65	923,077	←	0.68	882,353	1,491,176
Finalize	0.08	7,500,000	←	0.12	5,000,000	8,450,000
EFT	0.77	779,221	←	0.77	779,221	1,316,883
Banking SubTotal:	1.50	400,000	←	1.57	382,166	645,860
Payroll + Payslip + Banking Totals	14.53	41,294	←	18.82	31,881	53,879
Social Insurance						
Load	0.28	2,142,857	←	0.32	1,875,000	3,168,750
Update	0.20	3,000,000	←	0.23	2,608,696	4,408,696
S. I. SubTotal:	0.48	1,250,000	←	0.55	1,090,909	1,843,636
Payroll + Payslip + Banking + Social Insurance Totals	15.01	39,973	←	19.37	30,976	52,349

Table 1a: PeopleSoft Global Payroll 8.8 Process Runtimes

The retro calculation involved approximately 46% of the ‘monthly’ population. 23% had their payroll data re-run for the previous period. 23% had their payroll data re-run for the previous two periods. Thus, the small monthly run processed 16,900 segments rather than the base 10,000 employees. Likewise, the medium monthly run processed 84,500 segments rather than the base 50,000 payees. The computed transaction rates are still based upon the 10,000 or 50,000 monthly payees.

	Small Monthly	Medium Monthly
Active Payees	10,000	50,000
Total Segments (Including Retro)	16,900	84,500

Table 2: Payee and Retro Correspondence

50,000 Payees	Payroll – Not Including Retroactivity			Payroll - Including Retroactivity		
Process Tested	# Min. to Process	# Payees Processed per Hour	# Segments Processed per Hour	# Min. to Process	# Payees Processed per Hour	# Segments Processed per Hour
Payroll						
Identify	1.40	2,142,857	←	3.82	785,340	1,327,225
Calculate	49.83	60,205	←	81.42	36,846	62,270
Finalize	0.67	4,477,612	←	0.85	3,529,412	5,964,706
Payroll SubTotal:	51.90	57,803	←	86.09	34,847	58,892
Payslip						
Payslip Subtotal	21.03	142,653	←	25.87	115,964	195,980
Payroll + Payslip Totals	72.93	41,135	←	111.96	26,795	45,284
Banking						
Calculate	3.50	857,143	←	3.63	826,446	1,396,694
Finalize	0.40	7,500,000	←	0.47	6,382,979	10,787,234
EFT	2.05	1,463,415	←	2.07	1,449,275	2,449,275
Banking SubTotal:	5.95	504,202	←	6.17	486,224	821,718
Payroll + Payslip + Banking Totals	78.88	38,032	←	118.13	25,396	42,919
Social Insurance						
Load	0.80	3,750,000	←	0.98	3,061,224	5,173,469
Update	0.48	6,250,000	←	0.48	6,250,000	10,562,500
S. I. SubTotal:	1.28	2,343,750	←	1.46	2,054,795	3,472,603
Payroll + Payslip + Banking + Social Insurance Totals	80.16	37,425	←	119.59	25,086	42,395

Table 1b: PeopleSoft Global Payroll 8.8 Process Runtimes

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

SERVER PERFORMANCE

Table 3 shows the average CPU utilization for each process. The value shown is the average across all four processors.

	10,000 Payees		50,000 Payees	
	Non-Retro	Retro	Non-Retro	Retro
Payroll				
Identify	34	76	73	90
Calculate	95	97	97	95
Finalize	19	20	38	26
Payslip	29	28	29	29
Banking				
Calculate	60	64	82	89
Finalize	7	9	22	28
EFT	13	13	26	26
Social Insurance				
Load	17	17	30	27
Update	14	13	23	25

Table 3: Average CPU Utilization

The Finalize and EFT (Electronic Funds Transfer – within the Banking process) processes executed quickly. Therefore, it is less obvious if they are I/O bound. Payslip and the Social Insurance processes may have been somewhat I/O bound.

DATA COMPOSITION DESCRIPTION

History data for January 2004 through November 2004 was created prior to the timed benchmark runs (11 periods for monthly payees). This is shown graphically in Figure 2.

A payroll calendar was run for each month of this benchmark (as part of a single Calendar Group). This process includes Year End Adjustment calculation.

The Retro calculation primarily involves the first three processes (ID, Calc, Finalize). Two of the ‘monthly employee’ profiles have retro processing for the previous two months (October and November). Two other ‘monthly employee’ profiles have retro processing for only the previous month (November).

The employees were distributed over a single pay entity with a separate pay groups for Managerial, Full-Time Employees, Part-Time Daily employees and Part-Time hourly employees. There are 10 different monthly employee profiles. The distribution is as follows:

Pay Entities	Pay Entity 1 (4 Pay Groups) Monthly
Payees (Population)	100%
Managerial – Full-Time	20%
Non-Managerial Full-Time	40%
Part-Time Daily	20%
Part-Time Hourly	20%
Absence	0%
Vacation	20%
Positive Input	100%

Table 5: Japan Specific Setup

BENCHMARK ENVIRONMENT

HARDWARE CONFIGURATION

One Sun Fire™ V480 was used as the database server. It was equipped with the following:

- 4 × 900 Megahertz UltraSPARC® III Processors each with 8 Megabytes of Level-2 Cache
- 8 Gigabytes of Memory
- ~684 Gigabytes of total Disk Space (2 × 18 GB + 18 × 36 GB)
- 1 × Sun Integrated Fibre Channel Disk Controller
- 1 × SCSI Disk Controller (internal)

SOFTWARE VERSIONS

PeopleSoft Global Payroll (Japan extension) 8.8

PeopleTools 8.43

Oracle9i™ 9.2.0.4 (32-bit)

Sun Solaris 9 Operating Environment, 9 9/02
s9s_u1wos_08b SPARC

Micro Focus™ Server Express™ (COBOL) 2.0.11

BEA Tuxedo® 6.5 with Jolt 1.2

The logo for PeopleSoft, featuring the word "PeopleSoft" in a blue, serif font with a registered trademark symbol.

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