

PEOPLESOFT ENTERPRISE GLOBAL PAYROLL 8.9 (FRANCE) USING ORACLE9i ON A HEWLETT-PACKARD INTEGRITY rx8620

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 (English)	PeopleSoft Enterprise Global Payroll 8.9 (France)	
	150,000 Payees	
	# Minutes to Process	136 minutes
	Payees per Hour	66,176 per hour
Référence d'exécution (Français)	PeopleSoft Enterprise Paie Globale 8.9 (France)	
	150.000 Salariés	
	Temps d'Exécution	136 minutes
	Salariés / heure	66.176 par heure

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

BENCHMARK PROFILE

In June 2005, Oracle (PeopleSoft) conducted a benchmark in Pleasanton, CA to measure the batch performance of the [Employee] Identification, [Payroll] Calculation, Finalize, Banking and Payslip processes in Oracle's PeopleSoft Enterprise Global Payroll 8.9 (France) with Oracle9i™ 9.2.0.6. We used a 16-way Hewlett-Packard® Integrity™ rx8620 database server, running Hewlett-Packard® HP-UX 11i v2. An HP StorageWorks XP128 disk array was used for data storage.

The benchmark measured 'Global Payroll' application business process runtimes for a large database model. Testing was conducted in a controlled environment with no other applications running. The tuning changes, if any, were approved by PeopleSoft Enterprise Development and will be generally available in a future update. **The goal of this Benchmark was to obtain reference performance results for Oracle's PeopleSoft Enterprise Global Payroll 8.9 (France).**

PeopleSoft Enterprise Global Payroll 8.9
(France) using Oracle9i on an HP rx8620

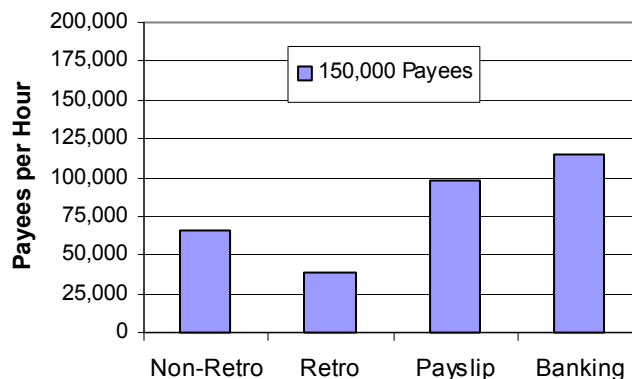


Figure 1: PeopleSoft Enterprise Global Payroll 8.9
(France) Processing Rates

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

METHODOLOGY

PeopleSoft Enterprise Global Payroll 8.9 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 Payslip processes were run as 16 concurrent processes—based upon the employee ID number ranges.

Business Process	Job Streams	Process Type
Identify	16	COBOL
Calculate	16	COBOL
Finalize	Single-Threaded	COBOL
Banking	Single-Threaded	App Engine & SQR
Payslip	16	AE & SQR

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 Enterprise Global Payroll 8.9 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, pay group and 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 and/or absence 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/absence 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.

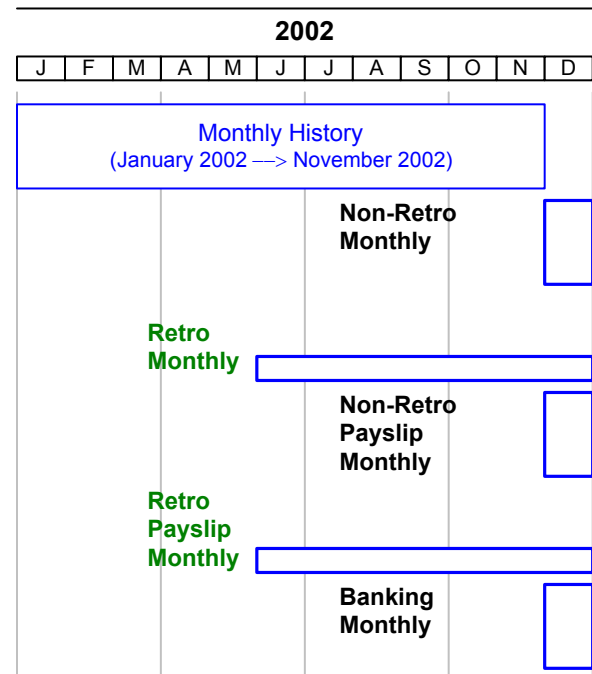


Figure 2: History and Execution Plan

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 and monthly payslip with retroactivity processes were the only processes involving more than a single (monthly) pay period. Other processes may take into account the results of retro calculations. In this case, 20% of the payees had their payroll recalculated for six previous periods.

BATCH RESULTS

The retro calculation involved 20% of the 'monthly' population having their payroll recalculated back through June. Thus, the 150,000-payee monthly [Retro] run processed 660,000 segments $[(30,000 \times 6) + (150,000 \times 1)] \times 2$ rather than the base 150,000 employees.

	150,000 Payees
Active Payees	150,000
Total Segments (No Retro)	300,000
Total Segments (Including Retro)	660,000

Table 1: Payee and Retro Correspondence

Table 2 contains the actual runtimes, in minutes, for the Global Payroll processes.

150,000 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	5	1,800,000	3,600,000	6	1,500,000	6,600,000
Calculate	128	70,313	140,625	227	39,648	174,449
Finalize	3	3,000,000	6,000,000	3	3,000,000	13,200,000
Payroll SubTotal:	136	66,176	132,353	236	38,136	167,797
Payslip						
Payslip Subtotal	32	281,250	562,500	92	97,826	430,435
Payroll + Payslip Totals	168	53,571	107,143	328	27,439	120,732
Banking						
Banking Prep	21	428,571	857,143	51	176,471	776,471
Banking FRANCE	14	642,857	1,285,714	22	409,091	1,800,000
EFT File	3	3,000,000	6,000,000	5	1,800,000	7,920,000
Banking SubTotal:	38	236,842	473,684	78	115,385	507,692
Payroll + Payslip + Banking Totals	206	43,689	87,379	406	22,167	97,537

Table 2: PeopleSoft Enterprise Global Payroll 8.9 Process Runtimes

SERVER PERFORMANCE

Table 4 shows the average CPU utilization for each process. The value shown is the average across all 16 processors.

	150,000 Payees			
	Non-Retro		Retro	
	CPU	I/O wait	CPU	I/O wait
Payroll				
Identify	28	22	49	24
Calculate	83	13	83	15
Finalize	1		1	
Payslip	44	35	30	60
Banking				
Prep	5		5	
FRANCE	6		6	
EFT	5		5	

Table 4: Average CPU Utilization

The Payroll (except Finalize) and Payslip processes were I/O bound.

I/O PERFORMANCE

The SAN-Connected HP Storage Works XP-128 disk array was used for storage. I/O performance is crucial to batch performance and is summarized as follows:

		Reads / Sec	Reads BPS	Writes / Sec	Writes BPS
Pay ID	AVG	20.1	416.1	7.8	139.0
	Peak	377.1	13,381.6	304.1	10,124.8
Pay Calc	AVG	9.8	118.5	8.8	111.9
	Peak	979.5	8,771.8	469.5	13,413.3
Pay Final	AVG	2.6	32.6	5.2	57.4
	Peak	125.7	4,076.7	191.1	7,020.3
Payslip	AVG	1.3	364.2	7.6	104.4
	Peak	9.9	11,137.5	961.7	29,352.1
Bank Prep	AVG	2.3	23.1	0.8	13.0
	Peak	270.0	2,847.2	632.2	17,608.2
Bank FRAN	AVG	0.6	26.9	1.0	12.5
	Peak	197.4	13,506.8	283.4	5,926.9
Bank EFT	AVG	0.1	4.1	0.5	8.1
	Peak	27.5	2,467.9	64.8	780.8

Table 5: I/O Subsystem Metrics

DATA COMPOSITION DESCRIPTION

History data for January 2002 through November 2002 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 using individual Calendar Groups for each month.

The Retro calculation primarily involves the first three processes (ID, Calc, Finalize). 20% of the 'monthly employee' profiles have retro processing for the previous six months (June through November).

The employees were distributed over a single pay entity and a single pay group. There are 16 different monthly employee profiles. The distribution is as follows:

Pay Entities	Pay Entity 1 (1 Pay Group) Monthly
Payees (Population)	100%
Payees with Element Segmentation	2%
Payees with Period Segmentation	15%
Payees with Disability	7%
Payees with Dependents	60%
Absence	69%
Vacation	50%
Sickness	10%
Work Accident	1%
Maternity	2%
Un-Paid Leave	3%
Family Event Leave	3%
Payees Terminated in 1 Month	3%
Payees Hired in 1 Month	3%
Payees with Positive Input	25%
E & D Override	50%
Payees with Loan	5%
Payees with Garnishment	3%
Payees with Retro	20%
Average Number of Earnings Deductions Calculated	>40

Table 6: France Specific Setup

BENCHMARK ENVIRONMENT

HARDWARE CONFIGURATION

A Hewlett-Packard® Integrity™ rx8620 was used as the batch/database server. It was equipped with the following:

- 16 × 1.6 GHz Intel® Itanium®2 Processors, each with 16 Kilobytes of Level-1 Cache, 256 Kilobytes of Level-2 Cache and 6 Megabytes of Level-3 Cache
- 32 Gigabytes of Memory (~31 GB used at peak load)
- 1 SAN-Connected HP StorageWorks XP128 disk array with 2 fibre-channel connections
- ~4.6 Terabytes of total Disk Space available (64 × 73 GB + 2 × 73 GB internal disk drives), approximately 800 GB of RAID 0+1 storage used for this benchmark
- 2 × Hewlett-Packard® Tachyon™ XL2 Fibre Channel Host Bus Adapters

SOFTWARE VERSIONS

Oracle's PeopleSoft Enterprise Global Payroll (France extension) 8.9

Oracle's PeopleSoft Enterprise (PeopleTools) 8.45

Oracle9i™ 9.2.0.6 (64-bit)

Hewlett-Packard® HP-UX® 11i v.2 (11.23) (64-bit)

Micro Focus™ Server Express™ (COBOL) 4.0 w/SP 1

BEA Tuxedo® 8.142 with Jolt 8.1



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