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**MANAGEMENT BRIEF**

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# **DB2 FOR PEOPLESOFT APPLICATIONS**

**Database Cost Comparisons for UNIX & Windows Deployments**



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# EXECUTIVE SUMMARY

The choice of a database is one of the most important technological issues facing any organization. Performance and functionality delivered by application solutions are materially affected by the databases they run on. Costs of solution deployment, support and operation are also – to a much greater extent than is generally realized – impacted by database choices.

This document deals with this issue for PeopleSoft applications. Specifically, it draws upon the experiences of 80 organizations of varying sizes, in a wide range of industries, to quantify relative costs of deploying PeopleSoft applications using Oracle or DB2 databases on UNIX and Windows servers. This group includes users of all major PeopleSoft systems.

Results of the analysis may be summarized as follows:

- **RISC/UNIX users.** Among organizations that have deployed PeopleSoft systems on Hewlett-Packard (HP), IBM and Sun Microsystems RISC/UNIX servers, Oracle software costs – consisting of license fees, update subscriptions and support for databases and tools – are 2.35 times higher than those for DB2.

Overall Oracle five-year costs, which also include additional database administration (DBA) personnel and hardware costs, are 3.30 times higher. Calculations allow for the greater processor overhead generated by Oracle deployments, which increases hardware and software costs.

These figures include Oracle software costs calculated using the company's CPU-based pricing scheme. If named user pricing is employed, Oracle software costs are 3.62 times higher than for DB2, and overall costs are 4.57 times higher.

- **Windows users.** Among organizations that have deployed PeopleSoft applications on Intel-based Windows servers, Oracle five-year software costs with CPU-based pricing are 3.14 times higher than for DB2, and overall costs are 5.36 times higher. If named user pricing is employed, Oracle software costs are 2.50 times higher than for DB2, while overall costs (which include the difference in DBA costs) are 4.73 times higher.

Relative Oracle and DB2 costs extend beyond differences in vendor packaging and pricing. DB2 deployments are significantly more efficient in the use of processor resources and personnel than are comparable Oracle installations.

The selection of Oracle or DB2 involves a choice about the degree of efficiency – or inefficiency – that will be embedded into backbone PeopleSoft infrastructures. If Oracle is selected, not only will costs be higher, but performance and functionality may also be impaired. As application portfolios, databases and workloads expand, these effects will escalate. Further escalation can be expected as new strategies for real-time integration are adopted.

# OVERVIEW

## Key Differences

The relative cost implications of Oracle and DB2 reflect significantly different vendor strategies. Oracle's large installed base and embedded user commitments are reflected in a generally conservative product strategy, and in periodic attempts to increase prices. IBM, targeting market share growth, tends to be more aggressive in both areas.

Four important differences affect comparative Oracle and DB2 costs:

1. **Pricing.** DB2 Enterprise Edition licenses are currently list priced at \$25,000 per CPU, compared to \$40,000 for Oracle Enterprise Edition. For low-end versions supporting up to four processors, DB2 Workgroup Edition is list priced at \$7,500 per CPU, compared to \$15,000 for Oracle Standard Edition. Although both are discounted in practice, users have generally experienced lower DB2 license fees.

IBM charges for update subscriptions and support are 12.5 percent for the first year, and 25 percent for each subsequent year, compared to 22 percent per year for Oracle. The marginally higher IBM charges are not, however, sufficient to offset higher Oracle license fees.

2. **Packaging.** IBM incorporates essential tools in its base DB2 offerings without additional charge. These are packaged and priced separately by Oracle. Costs for Oracle software include Diagnostic and Tuning Packs, each list priced at \$3,000 per CPU or \$60 per named user. Comparable functions are built into DB2.

DB2 also incorporates functions equivalent to separately priced Oracle change management, security and other tools. Although not included in Oracle software costs in this analysis, these may, at least in list price terms, increase costs by \$20,000 or more per CPU.

3. **Productivity.** Oracle databases typically require more time by DBAs for performance optimization and other administrative tasks than is the case for DB2. Staffing levels and personnel costs thus tend to be higher. PeopleSoft users surveyed estimated that DB2 required between 20 and 50 percent less DBA time.

Oracle DBA salaries are also typically higher than for other database platforms – the industry norm is around 10 percent – because of the greater complexity of Oracle administrative tasks. These calculations are based on average salaries of \$91,638 and \$84,239 for Oracle and DB2 DBAs respectively; i.e. a difference of 8.1 percent.

4. **Overhead.** Oracle software design is significantly less efficient than that of DB2 in its use of processor resources. Greater processor overhead means that more CPU power is required than if DB2 is employed. In many cases, this results in higher costs for software (particularly when this is priced according to numbers of CPUs) and hardware.

For the purposes of this analysis, a relatively conservative assumption of 25 percent higher Oracle overhead is employed (most industry estimates are in the 20 to 50 percent range). The extent to which this affects hardware configurations and costs varies according to workload size, and to the size and power of server platforms employed by individual users.

# RISC/UNIX Users

## User Population

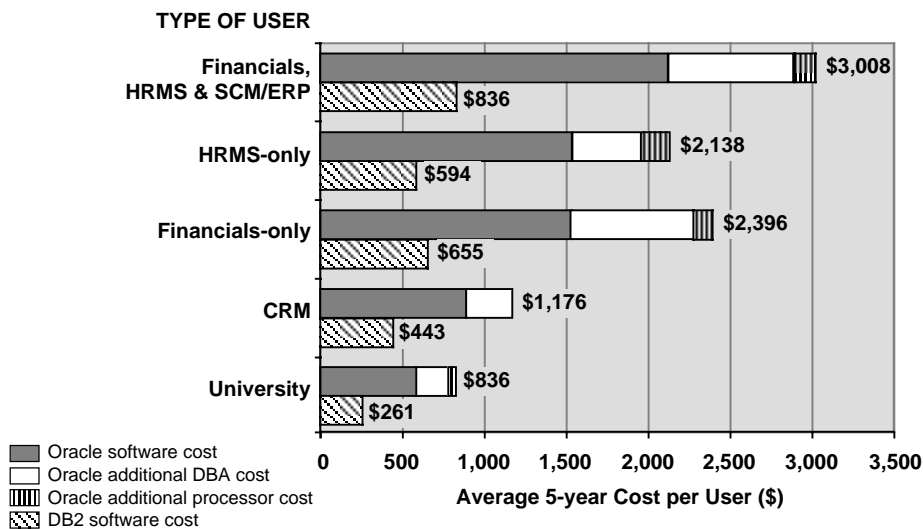
Cost comparisons for RISC/UNIX users are based on the experiences of 60 organizations. These included 45 companies and 3 government users employing PeopleSoft Financials, Human Resource Management Systems (HRMS), Enterprise Resource Planning (ERP), Supply Chain Management (SCM), Customer Relationship Management (CRM) and Enterprise Performance Management (EPM); along with 12 universities employing Financials, HRMS and Student Administration systems.

Costs are based on business profiles, application portfolios and configurations reported by these organizations. One major change has been made to data reported by users. Server configurations have been updated to latest-generation models from each vendor based on relative performance. Costs thus more closely resemble those that would be experienced by organizations deploying new PeopleSoft applications on current server technology.

## CPU-based Pricing

Cost comparisons, based upon inputs from this group, are summarized in figure 1. Oracle software costs are calculated using CPU-based pricing.

Figure 1  
RISC/UNIX Costs Comparison Summary (Oracle CPU-based Pricing)



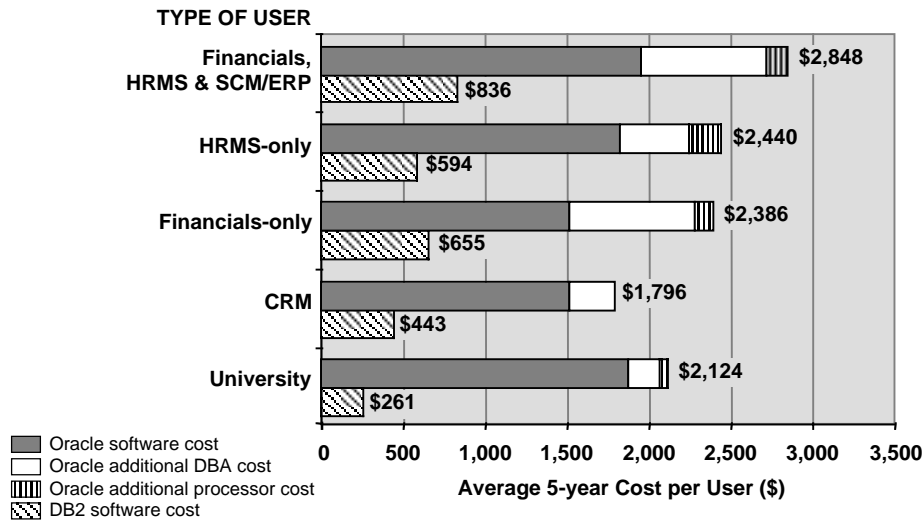
Results for transaction-processing systems were generally consistent. Among users employing combinations of Financials, HRMS and SCM/ERP applications, overall Oracle costs averaged 3.60 times higher than for DB2. Among users employing HRMS-only and Financials-only, the comparable figures were 3.60 and 3.66 times respectively.

Ratios of Oracle relative to DB2 costs were similar for university users. Among this group, overall Oracle costs averaged 3.20 times higher. Among CRM users, overall Oracle costs averaged 2.65 times higher than DB2 costs.

## Named User Pricing

If named user pricing was employed for Oracle software costs, the cost picture is as shown in figure 2.

Figure 2  
**RISC/UNIX Costs Comparison Summary (Oracle Named User Pricing)**



Oracle software costs for Financials, HRMS and SCM/ERP systems were marginally lower than those calculated using CPU-based pricing, while HRMS-only costs were marginally higher. Overall Oracle costs were 3.41, 4.11 and 3.64 times higher than for DB2, compared to 3.60, 3.60 and 3.66 times respectively for calculations employing CPU-based pricing.

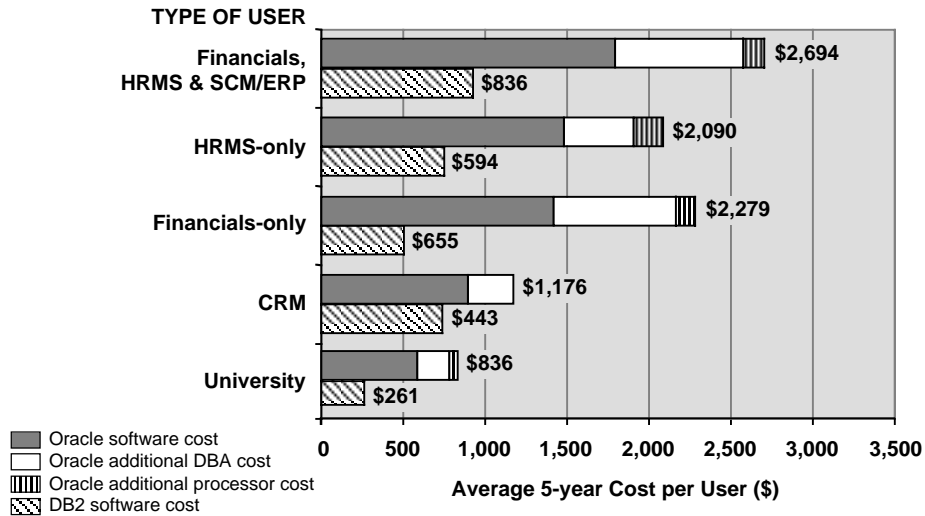
Oracle software costs for CRM and university users were, however, significantly higher than if CPU-based pricing was employed, reflecting larger numbers of users relative to configuration sizes. Oracle software costs for CRM users averaged 3.43 times higher than for DB2, while overall costs were 4.05 times higher. University ratios were 7.15 times and 8.13 times respectively.

Among the overall RISC/UNIX user population, Oracle software and overall costs were higher than for DB2 in all organizations. This was the case regardless of whether Oracle CPU-based or named user pricing was employed.

**Lowest Cost Option**

Because Oracle software costs varied according to whether CPU-based or named user pricing was employed, costs were totaled and averaged for RISC/UNIX users based on the lowest-cost Oracle pricing option in individual organizations. Results are summarized in figure 3.

Figure 3  
**RISC/UNIX Costs Comparison Summary (Oracle Lowest Cost Option)**



For Financials, HRMS and SCM/ERP systems, Oracle software costs averaged 2.15 times higher than for DB2, and the comparable ratios for HRMS-only and Financials-only users were 2.49 and 2.16 times respectively. Overall costs were 3.22, 3.52 and 3.48 times higher respectively. In all cases, the lowest cost option for CRM and university users was CPU-based pricing.

**EPM Users**

The RISC/UNIX population included four users employing PeopleSoft EPM systems. Two organizations employed parallel databases to handle very large analytical workloads. Oracle software costs for these averaged 3.08 times higher than for DB2, while overall costs were 3.65 times higher.

Cost disparities were due primarily to pricing differences. DB2 configurations employed IBM’s DB2 Extended Enterprise Edition (DB2 EEE), list priced at \$32,500 per CPU including clustering/partitioning support. Oracle configurations employed Oracle9i with Diagnostic and Tuning Packs, along with Real Application Clusters (RAC) and Partitioning, representing a total list price of \$72,000 per CPU. Higher DBA personnel and hardware costs also contributed.

Comparisons for the two other organizations were based on Oracle Enterprise Edition and DB2 Enterprise Edition without parallel capability. Oracle software costs for these averaged 2.75 times higher than for DB2, while overall Oracle costs were 3.30 times higher. Data from these organizations is not included in the RISC/UNIX results presented above.

PeopleSoft does not certify Oracle RAC. Any organization using this configuration would do so at its own risk.



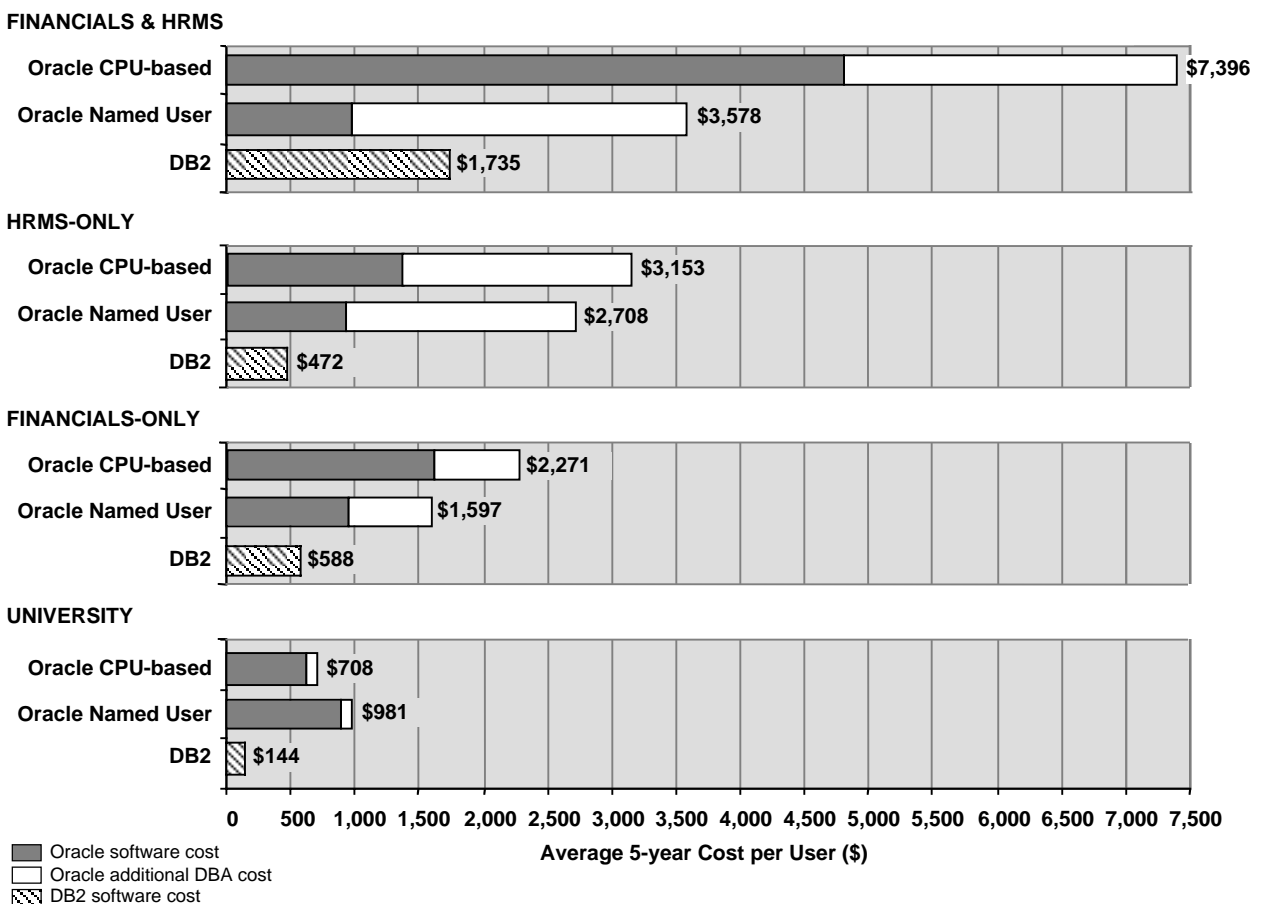
## Windows Users

Costs for Windows server installations are based on inputs from 20 organizations, including 15 companies, one government user and four universities.

These organizations, which were in most cases smaller than their RISC/UNIX counterparts, had deployed PeopleSoft Financials, HRMS and (in the case of universities) Student Administration systems on a range of Intel-based servers from Compaq, Dell, Hewlett-Packard, IBM and other vendors. Configurations and costs were calculated in the same manner as for RISC/UNIX users.

Windows cost comparison results are summarized in figure 4.

Figure 4  
Windows Cost Comparisons Summary



In all cases, organizations employed production and development servers with four or fewer CPUs. Software cost comparisons are thus based on Oracle Standard Edition and DB2 Workgroup Edition.

Among Financials and HRMS, HRMS-only, and Financials-only users, Oracle software costs calculated using CPU-based pricing averaged 2.77, 2.92, and 2.75 percent higher respectively than for DB2, while overall costs averaged 4.26, 6.69 and 3.86 higher respectively.

With the exception of university users, Oracle software costs calculated with named user pricing were in most cases lower than for CPU-based pricing. If named user pricing was employed, Oracle software costs were lower than those for DB2 among Financials and HRMS users; 1.98 times higher among HRMS-only users; and 1.60 times higher among Financials-only users. Overall Oracle costs were 2.06, 5.74 and 2.72 times higher than for DB2 respectively.

The lowest cost Oracle option for all Financials and HRMS, and Financials-only users was named user pricing. Oracle software costs calculated using CPU-based pricing were lower for one HRMS-only user. The difference is not significant.

Among university users, Oracle software costs calculated with CPU-based pricing averaged 4.30 times higher than for DB2, while overall Oracle costs were 4.93 times higher. If named user pricing was employed, Oracle costs averaged 6.20 and 6.83 times higher than for DB2 respectively. In all cases, Oracle costs were significantly higher if named user pricing was employed.

## Implications

A cost premium may be acceptable if it is necessary to deliver functionality required by the business. This is not the case here. As a platform for deploying PeopleSoft applications, DB2 provides equal or superior functionality at lower cost. The case for Oracle tends to be based on “softer” issues such as installed base compatibility, skill bases and technical standards, which do not translate directly into either functional or economic advantage.

For many organizations, existing commitments to Oracle argue in favor of deploying new applications on the same platform. This situation can also be considered to represent a strong argument for DB2.

Commitments to a single database, and to a single database vendor, pose inherent risks. The vendor’s rate of technological enhancement may slow, or exploitative pricing may be adopted.

The Oracle9i environment does not incorporate significant innovation, and Oracle’s long-term product directions remain conservative. Equally, although the company has abandoned its Universal Power Unit (UPU) pricing scheme, there are clear signs that management would like to raise database prices above present levels. Further attempts to do so can reasonably be expected.

It can be expected that IBM will maintain or, more likely, enhance the competitiveness of DB2 relative to Oracle. IBM product and pricing strategies remain aggressive, and the company continues to invest heavily in performance-related development. Project eLiza automation technologies offer the potential for further major productivity gains over time.

There is a clear business case for hedging strategic database commitments. DB2 emerges as the main contender for PeopleSoft applications, offering functional benefits, greater efficiency and lower overall costs. The status of Oracle as an exclusive organizational database standard becomes moot.

# DETAILED DATA

## Oracle Breakdowns

Overall Oracle cost averages for the organizations surveyed are as shown in figures 5 and 6.

Figure 5

### Breakdown of Overall Oracle Costs: RISC/UNIX Users

AVERAGE COST PER USER	FINANCIALS, HRMS & SCM/ERP (\$)	HRMS ONLY (\$)	FINANCIALS ONLY (\$)	CRM (\$)	UNIVERSITY (\$)
<b>ORACLE SOFTWARE</b>					
CPU-based	1,815	1,570	1,924	896	553
Named user	1,808	1,788	1,634	1,462	1,742
Lowest	1,653	1,481	1,587	896	553
<b>ADDITIONAL ORACLE COST</b>					
DBA	599	349	724	262	216
Processor	189	257	85	–	39
<b>TOTAL ORACLE COST</b>					
CPU-based	2,603	2,176	2,733	1,158	808
Named user	2,596	2,394	2,443	1,724	1,997
Lowest	2,441	2,087	2,396	1,158	808

Figure 6

### Breakdown of Overall Oracle Costs: Windows Users

AVERAGE COST PER USER	FINANCIALS & HRMS (\$)	HRMS ONLY (\$)	FINANCIALS ONLY (\$)	UNIVERSITY (\$)
<b>ORACLE SOFTWARE</b>				
CPU-based	3,077	1,011	1,285	497
Named user	778	742	761	721
<b>ADDITIONAL ORACLE COST</b>				
DBA	2,465	1,723	590	84
<b>TOTAL ORACLE COST</b>				
CPU-based	5,542	2,734	1,875	581
Named user	3,243	2,465	1,351	805

Additional DBA and hardware costs are not affected by differences in Oracle software pricing, and the same figures for these are employed in all totals.

## User Profiles

PeopleSoft applications employed in user profiles are as shown in figure 7.

Figure 7  
PeopleSoft Applications

FINANCIALS	HRMS	CRM	SCM/ERP
GL General ledger	HR Human resources	MK Marketing	EP Enterprise planning
AR Accounts receivable	BA Benefits administration	SL Sales	PP Production planning
AP Accounts payable	PA Pension administration	SP Support	CM Cost management
AM Asset management	TL Time & labor	IN Interaction management	EN Engineering
IM Inventory management	PY Payroll	FS Field services	PM Production management
PC Purchasing		HD Help desk	PR Product planning
BI Billing		CT CTI integration	
PJ Projects			
BD Budgets			

Detailed user profiles are presented in figures 8 through 17

Figure 8

**RISC/UNIX Profiles: Financials, HRMS and SCM/ERP Users**

<b>ORGANIZATION</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Manufacturing	Manufacturing	Manufacturing	Manufacturing
<b>Revenues</b>	\$30 billion	\$15 billion	\$8 billion	\$6.5 billion
<b>Employees</b>	20,000	60,000	35,000	30,000
<b>Applications</b>				
Financials	GL, AR, AP, AM, IM, PC, PJ	GL, AP, AM, PJ, BD	GL, AP, AM, PC, PJ, BD	AR, AP, GL, AM, IM, PC, BI, PJ
HRMS	HR, BA, PY	HR, BA, PY	HR, PY	HR, BA, PA, PY
SCM/ERP	–	–	–	EP, PP, OM, PM
<b>Number users</b>	2,500	3,000	2,000	3,500
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	2 x IBM p670 16 x 1.1 GHz each	2 x IBM p670 16 x 1.1 GHz each	2 x HP rp8400 16 x 875 MHz each	2 x Sun 6800 24 x 1 GHz each
<b>Development</b>	IBM p670 16 x 1.1 GHz	IBM p670 16 x 1.1 GHz	HP rp8400 16 x 875 MHz	Sun 4800 12 x 1 GHz  Sun 6800 16 x 1 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	2 x IBM p670 16 x 1.1 GHz each	2 x IBM p650 8 x 1.45 GHz each	2 x HP rp8400 12 x 875 MHz each	2 x Sun 6800 24 x 1 GHz each
<b>Development</b>	IBM p650 8 x 1.45 GHz	IBM p650 8 x 1.45 GHz	HP rp8400 12 x 875 MHz	Sun 4800 12 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	4,637	4,637	4,637	7,342
<b>Named users</b>	5,603	6,569	4,637	7,535
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	2,125	1,275	1,913	3,188
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	2,379	3,568	2,379	4,163
<b>DB2</b>	1,367	2,187	1,367	2,460
<b>Difference</b>	<b>1,012</b>	<b>1,381</b>	<b>1,012</b>	<b>1,703</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	1,899	1,899	2,079	2,588
<b>DB2</b>	1,349	249	1,605	1,997
<b>Difference</b>	<b>550</b>	<b>1,650</b>	<b>474</b>	<b>591</b>

Figure 8 (continued)

**RISC/UNIX Profiles: Financials, HRMS and SCM/ERP Users**

<b>ORGANIZATION</b>	<b>E</b>	<b>F</b>	<b>G</b>	<b>H</b>
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Services	Finance	Retail	Media
<b>Revenues</b>	\$6.5 billion	\$6.5 billion	\$5 billion	\$4 billion
<b>Employees</b>	18,000	50,000	45,000	12,000
<b>Applications</b>				
Financials	GL, AR, AP, AM, BI, PJ	GL, AR, AP, AM, IM, PC, PJ, BD	GL, AR, AM	GL, AP, PC
HRMS	HR, BA, TL, PY	HR, BA, PA, TL, PY	HR, BA, PY	HR, BA, PY
SCM/ERP	IM, PC, EP, OM, PM, PR	–	–	–
<b>Number users</b>	2,000	2,500	850	500
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	2 x HP rp8400 16 x 875 MHz each	2 x Sun 6800 16 x 1 GHz each	2 x HP rp7410 8 x 875 MHz each	Sun V880 8 x 900 MHz
<b>Development</b>	HP rp8400 16 x 875 MHz	Sun V880 8 x 900 MHz	HP rp7410 8 x 875 MHz	Sun 280R 2 x 1 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	2 x HP rp8400 12 x 875 MHz each	2 x Sun 4800 12 x 1 GHz each	2 x HP rp7410 8 x 895 MHz each	Sun V880 8 x 900 MHz
<b>Development</b>	HP rp8400 12 x 875 MHz	Sun V880 8 x 900 MHz	HP rp7410 8 x 895 MHz	Sun 280R 2 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	4,637	3,864	2,318	861
<b>Named users</b>	4,637	5,216	2,029	975
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	1,913	1,700	1,275	457
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	2,974	2,974	2,379	1,784
<b>DB2</b>	1,913	1,640	1,367	1,093
<b>Difference</b>	<b>1,061</b>	<b>1,334</b>	<b>1,012</b>	<b>691</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	2,079	1,250	864	80
<b>DB2</b>	1,605	822	864	80
<b>Difference</b>	<b>474</b>	<b>428</b>	<b>0</b>	<b>0</b>

Figure 8 (continued)

**RISC/UNIX Profiles: Financials, HRMS and SCM/ERP Users**

ORGANIZATION	I	J	K	L
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Finance	Manufacturing	Manufacturing	Manufacturing
<b>Revenues</b>	\$4 billion	\$2.5 billion	\$2.3 billion	\$2 billion
<b>Employees</b>	7,000	12,000	9,000	10,000
<b>Applications</b>				
Financials	GL, AR, AP, AM, IM, PC, BL, BD	GL, AR, AP, AM, PC, BD	GL, AP, AM, IM, PC, PJ, BD	GL, AR, AP, PC, PJ, BD
HRMS	HR, BA, PY	HR, BA, PA, TL, PY	HR, BA, PY	HR, BA, PY
SCM/ERP	–	–	EP	IM, PC, EP, PP
<b>Number users</b>	500	400	600	700
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	Sun 4800 12 x 1 GHz	IBM p650 8 x 1.45 GHz	2 x HP rp7410 8 x 875 MHz each	IBM p650 8 x 1.45 GHz
<b>Development</b>	Sun V480 4 x 900 MHz	IBM p630 1 x 1 GHz	HP rp5470 4 x 875 MHz	IBM p650 4 x 1.45 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	Sun V880 8 x 900 MHz	IBM p650 4 x 1.45 GHz	2 x HP rp7410 8 x 875 MHz each	IBM p650 8 x 1.45 GHz
<b>Development</b>	Sun V480 2 x 900 MHz	IBM p630 1 x 1 GHz	HP rp5470 4 x 875 MHz	IBM p650 4 x 1.45 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	1,336	817	1,722	949
<b>Named users</b>	984	777	1,177	1,370
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	457	80	914	489
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	1,487	1,189	1,784	1,189
<b>DB2</b>	820	820	1,367	1,093
<b>Difference</b>	<b>667</b>	<b>369</b>	<b>417</b>	<b>96</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	409	98	634	134
<b>DB2</b>	80	66	634	134
<b>Difference</b>	<b>329</b>	<b>32</b>	<b>0</b>	<b>0</b>

Figure 8 (continued)

**RISC/UNIX Profiles: Financials, HRMS and SCM/ERP Users**

<b>ORGANIZATION</b>	<b>M</b>	<b>N</b>	<b>O</b>	<b>P</b>
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Healthcare	Manufacturing	Distribution	Manufacturing
<b>Revenues</b>	\$2 billion	\$1.5 billion	\$1.2 billion	\$1 billion
<b>Employees</b>	16,000	3,000	5,000	3,000
<b>Applications</b>				
Financials	GL, AR, AP, AM, PC, BD	GL, AR, AP, AM, BI, PJ, BD	GL, AR, AP, AM, BI, BD	GL, AR, AP, AM, BI
HRMS	HR, BA, PY	HR, BA, TL, PY	HR, BA, PY	HR, BA, PY
SCM/ERP	–	IM, PC, EP, PP, OM, PM	–	IM, PC, EP, PP, CM, EN, OM, PM, PR
<b>Number users</b>	500	500	350	500
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	2 x HP rp7410 8 x 875 MHz each	Sun V880 8 x 900 MHz	HP rp7410 8 x 875 MHz	HP GS 80 8 x 1.2 GHz
<b>Development</b>	HP rp5470 4 x 875 MHz	Sun 280R 2 x 1 GHz	HP rp2470 2 x 750 MHz	HP ES45 2 x 1.25 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	2 x HP rp7410 8 x 875 MHz each	Sun V880 8 x 900 MHz	HP rp7410 8 x 875 MHz	HP GS 160 8 x 1.2 GHz
<b>Development</b>	HP rp5470 4 x 875 MHz	Sun 280R 2 x 1 GHz	HP rp2470 2 x 750 MHz	HP ES45 2 x 1.25 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	1,722	861	861	861
<b>Named users</b>	984	975	685	975
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	914	457	457	457
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	1,189	1,784	1,189	1,784
<b>DB2</b>	820	1,367	820	1,093
<b>Difference</b>	<b>369</b>	<b>417</b>	<b>369</b>	<b>691</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	634	80	316	377
<b>DB2</b>	634	80	316	377
<b>Difference</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>



Figure 8 (continued)

**RISC/UNIX Profiles: Financials, HRMS and SCM/ERP Users**

ORGANIZATION	Q	R	S	T
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Finance	Energy	Telecom	Government
<b>Revenues</b>	\$1 billion	\$1 billion	\$700 million	N/A
<b>Employees</b>	3,000	3,500	4,500	11,000
<b>Applications</b>				
Financials	GL, AP, AM, PC, PJ, BD	GL, AR, AP, AM, BI, PJ, BD	GL, AR, AP, AM, BI, BD	GL, AR, AP, AM, IM, PC, PJ, BD
HRMS	HR, BA	HR, BA, PY	HR, BA, PY	HR, BA, PA, TL, PY
SCM/ERP	–	–	–	–
<b>Number users</b>	250	300	300	500
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	IBM p650 8 x 1.45 GHz	IBM p650 4 x 1.45 GHz	Sun V880 8 x 900 MHz	2 x HP ES45 4 x 1.25 GHz each
<b>Development</b>	IBM p630 1 x 1 GHz	IBM p630 1 x 1 GHz	Sun 280R 1 x 1 GHz	HP ES45 4 x 1 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	IBM p650 4 x 1.45 GHz	IBM p650 4 x 1.45 GHz	Sun V480 4 x 900 MHz	2 x HP ES45 4 x 1.25 GHz each
<b>Development</b>	IBM p630 1 x 1 GHz	IBM p630 1 x 1 GHz	Sun 280R 1 x 1 GHz	HP ES45 4 x 1.25 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	817	221	817	529
<b>Named users</b>	487	269	584	459
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	80	80	80	191
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	892	595	892	595
<b>DB2</b>	547	547	547	547
<b>Difference</b>	<b>345</b>	<b>48</b>	<b>345</b>	<b>48</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	98	66	73	222
<b>DB2</b>	66	66	37	222
<b>Difference</b>	<b>32</b>	<b>0</b>	<b>36</b>	<b>0</b>

Figure 9  
RISC/UNIX Profiles: HRMS-only Users

ORGANIZATION	A	B	C	D
<b>BUSINESS PROFILE</b>				
Industry	Government	Retail	Manufacturing	Telecom
Employees	250,000	150,000	125,000	85,000
Applications	HR, BA, PY	HR, BA, PY	HR, BA, PY	HR, BA, PY
Number users	2,300	2,000	3,000	1,350
<b>ORACLE CONFIGURATION</b>				
Production	2 x IBM p670 16 x 1.1 GHz each	2 x HP GS160 16 x 1.2 GHz each	2 x HP rp8400 16 x 875 MHz each	Sun 6800 16 x 1 GHz
Development	IBM p670 16 x 1.1 GHz	HP GS160 16 x 1.2 GHz	HP rp8400 16 x 875 MHz	Sun V480 4 x 900 MHz
<b>DB2 CONFIGURATION</b>				
Production	2 x IBM p650 8 x 1.45 GHz each	2 x HP GS160 12 x 1.2 GHz each	2 x HP rp8400 12 x 875 MHz each	Sun 4800 12 x 1 GHz
Development	IBM p650 8 x 1.45 GHz	HP GS160 12 x 1.2 GHz	HP rp8400 12 x 875 MHz	Sun V480 4 x 900 MHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
Processor-based	4,637	4,637	4,637	1,722
Named users	5,216	4,637	6,569	2,626
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
Processor-based	1,275	1,913	1,913	701
<b>DBA COST (5 YEAR) (\$000)</b>				
Oracle	2,974	2,379	2,379	1,784
DB2	1,913	1,640	1,640	1,367
Difference	<b>1,061</b>	<b>739</b>	<b>739</b>	<b>417</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
Oracle	1,899	2,782	2,079	623
DB2	249	1,671	1,605	409
Difference	<b>1,650</b>	<b>1,111</b>	<b>474</b>	<b>214</b>

Figure 9 (continued)  
RISC/UNIX Profiles: HRMS-only Users

ORGANIZATION	E	F	G	H
<b>BUSINESS PROFILE</b>				
Industry	Finance	Finance	Manufacturing	Government
Employees	70,000	60,000	45,000	40,000
Applications	HR, BA, PY	HR, BA, PY	HR, BA, PY	HR, BA, PY
Number users	1,000	700	750	1,100
<b>ORACLE CONFIGURATION</b>				
Production	HP rp8400 16 x 875 MHz	HP rp8400 12 x 875 MHz	IBM p650 8 x 1.45 GHz	Sun 4800 12 x 1 GHz
Development	HP rp8400 16 x 875 MHz	HP rp5470 4 x 875 MHz	IBM p630 1 x 1 GHz	Sun 280R 2 x 1 GHz
<b>DB2 CONFIGURATION</b>				
Production	HP rp8400 12 x 875 MHz	HP rp8400 12 x 875 MHz	IBM p650 4 x 1.45 GHz	Sun V880 8 x 900 MHz
Development	HP rp8400 12 x 875 MHz	HP rp5470 4 x 875 MHz	IBM p630 1 x 1 GHz	Sun 280R 2 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
Processor-based	3,091	1,336	817	1,247
Named users	2,705	1,370	1,453	2,134
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
Processor-based	1,275	701	80	457
<b>DBA COST (5 YEAR) (\$000)</b>				
Oracle	1,784	1,189	1,189	1,487
DB2	1,367	1,093	1,093	1,093
Difference	417	96	96	394
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
Oracle	1,386	593	98	382
DB2	1,070	593	66	73
Difference	316	0	32	309

Figure 9 (continued)  
RISC/UNIX Profiles: HRMS-only Users

ORGANIZATION	I	J	K	L
<b>BUSINESS PROFILE</b>				
Industry	Retail	Insurance	Energy	Telecom
Employees	35,000	25,000	18,000	10,000
Applications	HR, BA, PY	HR, BA, PY	HR, BA, PY	HR, BA, PA, TL, PY
Number users	600	450	250	120
<b>ORACLE CONFIGURATION</b>				
Production	HP rp7410 8 x 875 MHz	IBM p650 4 x 1.45 GHz	Sun V480 4 x 900 MHz	Sun 280R 2 x 1 GHz
Development	HP rp2470 2 x 750 MHz	IBM p630 1 x 1 GHz	Sun 280R 1 x 1 GHz	Sun 280R 1 x 1 GHz
<b>DB2 CONFIGURATION</b>				
Production	HP rp7410 8 x 875 MHz	IBM p650 4 x 1.45 GHz	Sun V480 4 x 900 MHz	Sun V480 2 x 900 MHz
Development	HP rp2470 2 x 750 MHz	IBM p630 1 x 1 GHz	Sun 280R 1 x 1 GHz	Sun 280R 1 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
Processor-based	861	221	221	132
Named users	1,168	401	225	110
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
Processor-based	457	80	80	48
<b>DBA COST (5 YEAR) (\$000)</b>				
Oracle	1,189	892	892	595
DB2	1,093	547	547	547
Difference	<b>96</b>	<b>345</b>	<b>345</b>	<b>48</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
Oracle	316	66	37	17
DB2	316	66	37	17
Difference	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Figure 10  
RISC/UNIX Profiles: Financials-only Users

ORGANIZATION	A	B	C	D
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Utility	Finance	Finance	Energy
<b>Employees</b>	\$50 billion	\$30 billion	\$18.5 billion	\$7.5 billion
<b>Applications</b>	GL, AR, AP, PC, BI, BD	AR, AP, PC, PJ, BI, BD, Treasury	GL, AP, PC, BI	GL, AR, AP, AM, IM, PC, PJ, BI, BD
<b>Number users</b>	1,200	1,000	300	700
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	IBM p670 16 x 1.1 GHz	IBM p670 16 x 1.1 GHz	Sun V480 4 x 900 MHz	HP rp8400 12 x 875 MHz
<b>Development</b>	IBM p670 16 x 1.1 GHz	IBM p670 8 x 1.1 GHz	Sun 280R 1 x 1 GHz	HP rp8400 12 x 875 MHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	IBM p670 16 x 1.1 GHz	IBM p670 16 x 1.1 MHz	Sun V480 4 x 900 MHz	HP rp7410 8 x 875 MHz
<b>Development</b>	IBM p670 16 x 1.1 GHz	IBM p670 8 x 1.1 GHz	Sun 280R 1 x 1 GHz	HP rp7410 8 x 875 MHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	3,091	2,318	221	2,318
<b>Named users</b>	3,091	2,318	269	1,932
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	1,700	1,275	80	850
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	1,784	1,784	1,189	1,784
<b>DB2</b>	1,093	1,093	820	1,093
<b>Difference</b>	<b>691</b>	<b>691</b>	<b>369</b>	<b>691</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	1,266	960	37	1,070
<b>DB2</b>	1,266	960	37	576
<b>Difference</b>	<b>0</b>	<b>0</b>	<b>0</b>	<b>494</b>

Figure 10 (continued)  
**RISC/UNIX Profiles: Financials-only Users**

ORGANIZATION	E	F	G	H
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Distribution	Media	Real estate	Utility
<b>Revenues</b>	\$5 billion	\$2.5 billion	\$1.5 billion	\$1 billion
<b>Applications</b>	GL, AR, AP, AM	GL, AR, AP	GL, AP, AM, PJ	GL, AR, AP, AM, IM, PC, PJ, BD
<b>Number users</b>	200	120	200	300
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	IBM p650 4 x 1.45 GHz	HP ES45 2 x 1 GHz	IBM p630 2 x 1 GHz	HP rp2470 2 x 750 MHz
<b>Development</b>	IBM p630 1 x 1 GHz	HP ES45 1 x 1 GHz	IBM p630 1 x 1 GHz	HP rp2470 1 x 750 MHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	IBM p650 4 x 1.45 GHz	HP ES45 2 x 1 GHz	IBM p630 1 x 1 GHz	HP rp2470 1 x 750 MHz
<b>Development</b>	IBM p630 1 x 1 GHz	HP ES45 1 x 1 GHz	IBM p630 1 x 1 GHz	HP rp2470 1 x 750 MHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	221	132	132	132
<b>Named users</b>	181	110	181	269
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	80	48	32	32
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	595	595	892	595
<b>DB2</b>	547	547	547	547
<b>Difference</b>	<b>48</b>	<b>48</b>	<b>345</b>	<b>48</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	66	64	44	72
<b>DB2</b>	66	64	30	32
<b>Difference</b>	<b>0</b>	<b>0</b>	<b>14</b>	<b>40</b>

Figure 11  
RISC/UNIX Profiles: CRM Users

ORGANIZATION	A	B	C	D
<b>BUSINESS PROFILE</b>				
Industry	Distribution	Software	Finance	Distribution
Revenues	\$3 billion	\$2 billion	\$2 billion	\$1.5 billion
Applications	SP, IN, HD, CT	MK, SL, SP, IN, CT	MK, SL, SP, IN	MK, SL, SP, FS
Number users	1,200	2,000	1,700	700
<b>ORACLE CONFIGURATION</b>				
Production	2 x IBM p650 4 x 1.45 GHz each	2 x Sun V880 8 x 900 MHz each	2 x HP rp7410 8 x 875 MHz each	2 x Sun V480 4 x 900 MHz each
Development	IBM p650 4 x 1.45 GHz	Sun V880 8 x 900 MHz	HP rp7400 8 x 875 MHz	Sun 280R 2 x 1 GHz
<b>DB2 CONFIGURATION</b>				
Production	2 x IBM p650 4 x 1.45 GHz each	2 x Sun V880 8 x 900 MHz each	2 x HP rp8400 8 x 875 MHz each	2 x Sun V480 4 x 900 MHz each
Development	IBM p650 4 x 1.45 GHz	Sun V880 8 x 900 MHz	HP rp7400 8 x 875 MHz	Sun 280R 2 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
Processor-based	529	2,318	2,318	441
Named users	1,076	4,250	3,671	626
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
Processor-based	191	1,275	1,275	159
<b>DBA COST (5 YEAR) (\$000)</b>				
Oracle	595	1,784	1,487	892
DB2	547	1,093	1,093	547
Difference	<b>48</b>	<b>691</b>	<b>394</b>	<b>345</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
Oracle	153	204	864	76
DB2	153	204	864	76
Difference	<b>0</b>	<b>0</b>	<b>0</b>	<b>0</b>

Figure 12  
RISC/UNIX Profiles: EPM Users

ORGANIZATION	A	B	C	D
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Finance	Finance	Finance	Finance
<b>Revenues</b>	\$35 billion	\$18 billion	\$1.5 billion	\$1 billion
<b>Assets</b>	\$600 billion	\$250 billion	N/A	\$90 billion
<b>Database</b>	2+ TB Parallel	1.5 TB Parallel	500 GB	200 GB
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	IBM p690 24 x 1.3 GHz	IBM p670 16 x 1.1 GHz	Sun 6800 16 x 1 GHz	Sun V880 8 x 900 MHz
<b>Development</b>	IBM p670 16 x 1.1 GHz	IBM p650 8 x 1.45 GHz	Sun V880 8 x 900 MHz	Sun 280R 2 x 1GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	IBM p690 16 x 1.3 GHz	IBM p670 16 x 1.1 GHz	Sun 4800 12 x 900 MHz	Sun V880 8 x 900 MHz
<b>Development</b>	IBM p670 8 x 1.1 GHz	IBM p650 8 x 1.45 GHz	Sun V480 4 x 900 MHz	Sun 280R 2 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	6,384 <sup>(1)</sup>	3,830 <sup>(1)</sup>	2,318	861
<b>Named users</b>	–	–	–	–
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	1,658 <sup>(2)</sup>	1,658 <sup>(2)</sup>	701	457
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	1,189	892	595	595
<b>DB2</b>	547	547	547	547
<b>Difference</b>	<b>642</b>	<b>345</b>	<b>48</b>	<b>48</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	2,119	716	659	300
<b>DB2</b>	1,215	716	109	300
<b>Difference</b>	<b>904</b>	<b>0</b>	<b>550</b>	<b>0</b>

<sup>(1)</sup> Includes real application clusters

<sup>(2)</sup> Includes partitioning/clustering



Figure 13  
RISC/UNIX Profiles: University Users

ORGANIZATION	A	B	C	D
<b>UNIVERSITY PROFILE</b>				
<b>Number students</b>	65,000	50,000	40,000	35,000
<b>Applications</b>	Student Admin Financials HRMS	Student Admin Financials HRMS	Student Admin Financials HRMS	Student Admin Financials HRMS
<b>Number users</b>	5,000	4,500	4,000	3,500
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	2 x IBM p690 16 x 1.3 GHz each	2 x HP rp7410 8 x 875 MHz	IBM p670 16 x 1.1 GHz	IBM p670 16 x 1.1 GHz
<b>Development</b>	IBM p670 16 x 1.1 G MHz	HP rp7410 8 x 875 MHz	IBM p650 4 x 1.45 GHz	IBM p650 4 x 1.45 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	2 x IBM p670 16 x 1.1 GHz each	2 x HP rp7410 8 x 875 MHz each	IBM p670 16 x 1.1 GHz	IBM p670 8 x 1.1 GHz
<b>Development</b>	IBM p650 8 x 1.45 G MHz	HP rp7410 8 x 875 MHz	IBM p650 4 x 1.45 GHz	IBM p650 4 x 1.45 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	4,637	2,318	1,722	1,722
<b>Named users</b>	10,433	9,080	7,746	6,780
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	2,125	1,275	914	489
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	2,974	2,379	2,379	2,379
<b>DB2</b>	1,640	1,367	1,367	1,367
<b>Difference</b>	<b>1,334</b>	<b>1,012</b>	<b>1,012</b>	<b>1,012</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	2,409	864	684	684
<b>DB2</b>	1,349	864	684	134
<b>Difference</b>	<b>1,060</b>	<b>0</b>	<b>0</b>	<b>550</b>

Figure 13 (continued)  
**RISC/UNIX Profiles: University Users**

ORGANIZATION	E	F	G	H
<b>UNIVERSITY PROFILE</b>				
<b>Number students</b>	25,000	20,000	20,000	18,000
<b>Applications</b>	Student Admin Financials HRMS	Student Admin Financials HRMS	Student Admin Financials HRMS	Student Admin Financials HRMS
<b>Number users</b>	3,000	2,500	2,200	2,000
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	Sun 6800 24 x 1 GHz	Sun 4800 12 x 1 GHz	2 x HP rp7410 8 x 875 MHz each	Sun 4800 12 x 1 GHz
<b>Development</b>	Sun V480 4 x 900 MHz	Sun 280R 2 x 1 GHz	HP rp2470 2 x 750 MHz	Sun V480 4 x 750 MHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	Sun 6800 16 x 1 GHz	Sun V880 8 x 900 MHz	2 x HP rp7410 8 x 875 MHz each	Sun 4800 12 x 1 GHz
<b>Development</b>	Sun V480 4 x 900 MHz	Sun 280R 1 x 1 GHz	HP rp2470 2 x 750 MHz	Sun V480 4 x 900 MHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	2,495	1,247	1,634	1,336
<b>Named users</b>	5,814	4,839	4,259	3,882
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	914	441	882	701
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	1,784	1,784	1,784	1,487
<b>DB2</b>	1,093	1,367	1,093	1,093
<b>Difference</b>	<b>691</b>	<b>417</b>	<b>691</b>	<b>394</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	842	389	604	409
<b>DB2</b>	623	73	604	409
<b>Difference</b>	<b>219</b>	<b>316</b>	<b>0</b>	<b>0</b>

Figure 13 (Continued)  
RISC/UNIX Profiles: University Users

ORGANIZATION	I	J	K	L
<b>UNIVERSITY PROFILE</b>				
<b>Number students</b>	17,000	15,000	10,000	10,000
<b>Applications</b>	Student Admin Financials HRMS	Student Admin Financials HRMS	Student Admin Financials HRMS	Student Admin Financials HRMS
<b>Number users</b>	2,000	2,000	1,500	1,200
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	Sun 4800 12 x 1 GHz	IBM p650 8 x 1.45 GHz	HP rp7410 8 x 875 MHz	HP ES45 4 x 1.25 GHz
<b>Development</b>	Sun V480 4 x 900 MHz	IBM p630 2 x 1 GHz	HP rp2470 2 x 750 MHz	HP ES45 1 x 1.25 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	Sun 4800 8 x 1 GHz	IBM p650 8 x 1.45 GHz	HP rp7410 8 x 875 MHz	HP ES45 4 x 1.25 GHz
<b>Development</b>	Sun 280R 2 x 1 GHz	IBM p630 2 x 1 GHz	HP rp2470 2 x 750 MHz	HP ES45 1 x 1.25 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	1,336	861	861	221
<b>Named users</b>	3,882	3,873	2,907	1,063
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	457	457	457	80
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	1,487	1,189	1,189	1,189
<b>DB2</b>	1,093	1,093	1,093	1,093
<b>Difference</b>	<b>394</b>	<b>96</b>	<b>96</b>	<b>96</b>
<b>PROCESSOR COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	409	112	316	95
<b>DB2</b>	80	112	316	95
<b>Difference</b>	<b>329</b>	<b>0</b>	<b>0</b>	<b>0</b>

Figure 14

## Windows Profiles: Financials and HRMS Users

ORGANIZATION	A	B	C	D
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Manufacturing	Services	Manufacturing	Healthcare
<b>Revenues</b>	\$2.5 billion	\$1 billion	\$600 million	\$200 million
<b>Employees</b>	2,000	4,000	5,000	1,200
<b>Applications</b>				
Financials	GL, AR, AP, AM, IM, PC, BI, PJ, BD, Treasury	GL, AR, AP, AM, PC, PJ, BD	AR, BI	GL, AP, PC, IM
HRMS	HR, BA, PY	HR, BA, PY	HR, BA, PY	HR, BA, TL, PY
SCM/ERP	OM			
<b>Number users</b>	150	60	30	85
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	2 x (4 x 1.6 GHz)	2 x (4 x 1.3 GHz)	4 x 1 GHz	2 x 1.2 GHz
<b>Development</b>	2 x 1 GHz	2 x 1 GHz	1 x 1 GHz	1 x 1 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	2 x (4 x 1.2 GHz)	2 x (4 x 1 GHz)	4 x 1 GHz	2 x 1 GHz
<b>Development</b>	2 x 1 GHz	2 x 1 GHz	1 x 1 GHz	1 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	441	441	221	132
<b>Named users</b>	141	62	31	79
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	159	159	80	48
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	1,189	892	595	595
<b>DB2</b>	820	547	547	547
<b>Difference</b>	<b>369</b>	<b>345</b>	<b>48</b>	<b>48</b>

Figure 15  
Windows Profiles: HRMS-only Users

ORGANIZATION	A	B	C	D
<b>BUSINESS PROFILE</b>				
Industry	Media	Manufacturing	Retail	Manufacturing
Employees	20,000	18,000	15,000	13,000
Applications	HR, BA, PY	HR, BA, PY	HR, BA, PY	HR, BA, PY
Number users	250	200	200	120
<b>ORACLE CONFIGURATION</b>				
Production	2 x (4 x 1.6 GHz)	2 x (2 x 1.6 GHz)	2 x (2 x 1.4 GHz)	2 x 1.6 GHz
Development	2 x 1 GHz	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz
<b>DB2 CONFIGURATION</b>				
Production	2 x (4 x 1.3 GHz)	2 x (2 x 1.2 GHz)	2 x (2 x 1 GHz)	2 x 1.2 GHz
Development	1 x 1.6 GHz	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
Processor-based	441	221	221	132
Named users	229	181	181	110
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
Processor-based	143	80	80	48
<b>DBA COST (5 YEAR) (\$000)</b>				
Oracle	1,189	1,189	1,189	1,189
DB2	820	820	820	820
Difference	<b>369</b>	<b>369</b>	<b>369</b>	<b>369</b>

Figure 15 (continued)  
**Windows Profiles: HRMS-only Users**

ORGANIZATION	E	F	G	H
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Healthcare	Government	Manufacturing	Utility
<b>Employees</b>	12,000	8,000	4,000	2,500
<b>Applications</b>	HR, BA, PY	HR, BA, PY	HR, BA, PA, TL, PY	HR, BA, TL, PY
<b>Number users</b>	100	150	30	80
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	2 x 1.2 GHz	1 x .6 GHz	1 x 1.2 GHz	1 x 1.3 GHz
<b>Development</b>	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	1 x 1.6 GHz	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz
<b>Development</b>	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	132	88	88	88
<b>Named users</b>	93	137	31	75
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	32	32	32	32
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	892	595	595	595
<b>DB2</b>	547	547	547	547
<b>Difference</b>	<b>345</b>	<b>48</b>	<b>48</b>	<b>48</b>

Figure 16

**Windows Profiles: Financials-only Users**

<b>ORGANIZATION</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>BUSINESS PROFILE</b>				
<b>Industry</b>	Transportation	Distribution	Finance	Finance
<b>Employees</b>	\$1.5 billion	\$1 billion	\$1 billion	\$800 million
<b>Applications</b>	GL, AR, AP	GL, AP, AM	GL, AP, PC, BI, BD	GL, AR, AP, PC, BI, BD
<b>Number users</b>	65	80	100	60
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	2 x 1.2 GHz	2 x 1.4 GHz	2 x 1.6 GHz	1 x 1.4 GHz
<b>Development</b>	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	2 x 1 GHz	2 x 1.2 GHz	2 x 1.3 GHz	1 x 1.4 GHz
<b>Development</b>	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	132	132	132	88
<b>Named users</b>	62	75	93	57
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	48	48	48	32
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	595	595	595	595
<b>DB2</b>	547	547	547	547
<b>Difference</b>	<b>48</b>	<b>48</b>	<b>48</b>	<b>48</b>

**Figure 17**  
**Windows Profiles: University Users**

<b>ORGANIZATION</b>	<b>A</b>	<b>B</b>	<b>C</b>	<b>D</b>
<b>UNIVERSITY PROFILE</b>				
<b>Number students</b>	12,500	9,000	6,000	4,000
<b>Applications</b>	Financials	Financials	Student Admin	Student Admin Financials HRMS
<b>Number users</b>	600	450	500	600
<b>ORACLE CONFIGURATION</b>				
<b>Production</b>	2 x (4 x 1.6 GHz)	2 x (4 x 1.3 GHz)	2 x 1.6 GHz	2 x (4 x 1 GHz)
<b>Development</b>	1 x 1.6 GHz	1 x 1.2 GHz	1 x 1 GHz	1 x 1 GHz
<b>DB2 CONFIGURATION</b>				
<b>Production</b>	2 x (4 x 1.2 MHz)	2 x 1 GHz	2 x 1.2 GHz	2 x (2 x 1.6 GHz)
<b>Development</b>	1 x 1.2 GHz	1 x 1 GHz	1 x 1 GHz	1 x 1 GHz
<b>ORACLE SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	397	397	132	397
<b>Named users</b>	534	401	445	534
<b>DB2 SOFTWARE COST (5 YEAR) (\$000)</b>				
<b>Processor-based</b>	143	48	48	80
<b>DBA COST (5 YEAR) (\$000)</b>				
<b>Oracle</b>	595	595	595	595
<b>DB2</b>	547	547	547	547
<b>Difference</b>	<b>48</b>	<b>48</b>	<b>48</b>	<b>48</b>



# METHODOLOGY

## Sample Distribution

Configuration and cost comparisons are based on a representative sample of 80 organizations that have deployed PeopleSoft applications indicated in profiles. Distribution of this group by industry sector and size are summarized in figures 18 and 19.

Figure 18

**Comparison User Profile Sample: Industry Sectors**

INDUSTRY	RISC/UNIX-BASED	WINDOWS-BASED	INDUSTRY	RISC/UNIX-BASED	WINDOWS-BASED
Manufacturing	11	5	Utilities	2	1
Finance	12	2	Services	1	1
Distribution	4	1	Insurance	1	–
Retail	3	1	Real estate	1	–
Energy	3	–	Software	1	–
Healthcare	1	2	Transportation	–	1
Media	2	1	Government	3	1
Telecommunications	3	–	Universities	12	4

Figure 19

**Comparison User Profile Sample: Size Distribution**

REVENUES	RISC/UNIX-BASED	WINDOWS-BASED	NUMBER EMPLOYEES (HRMS Users)	RISC/UNIX-BASED	WINDOWS-BASED
Over \$10 billion	14	1	Over 50,000	8	–
\$1 – 10 billion	30	9	10,000 – 50,000	16	5
Under \$1 billion	1	5	Under 10,000	8	7

Government users included state and city administrations. Universities employing RISC/UNIX servers ranged from 10,000 to more than 65,000 students, while their Windows counterparts reported from 4,000 to 12,500 students.

## Server Configurations and Costs

Server configurations employed in comparison profiles are for database servers only, and do not include application, reporting and other types of server commonly found in PeopleSoft environments.

Costs are based on vendor list prices, and do not allow for any special discounts or pricing options. Configurations and costs include development and failover as well as production servers.

Configurations are based on those reported by users. These included a range of IBM, Hewlett-Packard (including Compaq) and Sun Microsystems RISC/UNIX platforms, as well as Intel-based servers from these and other vendors employing Oracle or DB2 databases.

Configurations have been updated to vendor models and technologies current as of July 2002. New configurations were derived by applying credible vendor relative performance data where this was available, or by using estimates of relative performance developed by the International Technology Group and other industry sources. In updating configurations, the next largest vendor model was employed – e.g. a 14-CPU configuration was translated to a 16-CPU configuration.

Although most organizations employed relatively small, dedicated platforms as development and test servers (the norm was a quarter to an eighth of the size of production systems), some users reported that larger machines were used both for test and development, and as failovers for production systems. Where appropriate, comparison profiles reflect such configurations.

For translating Oracle to DB2 configurations, and vice versa, a standard assumption of 25 percent higher Oracle overhead for comparable workloads and applications was employed. Most industry estimates are in the 20 to 50 percent range.

Processor costs are based on hardware acquisition and five-year maintenance for server configurations based on published list prices for the vendors and models indicated. A standard assumption of one-gigabyte (GB) of main memory per CPU was employed for all platforms. Calculations do not include disk, tape, peripheral or other external devices.

## **Software Costs**

### ***Oracle Costs***

Oracle software costs are based on published prices of \$40,000 per processor and \$800 per named user for Oracle9i Enterprise Edition, and \$15,000 per processor and \$300 per named user for Oracle9i Standard Edition for perpetual licenses; plus Oracle Diagnostic and Tuning Packs based on published prices of \$3,000 per processor and \$60 per named user.

Named-user costs for production servers are based on numbers of users reported by organizations surveyed. Development server costs are based on minimum named users. Costs for the two EPM user profiles employing parallel databases include Real Application Clusters adding \$20,000 per processor in license costs.

Software costs for all Oracle products include update subscriptions and support based on 15 percent and 7 percent respectively per year of license costs for five years.

### ***DB2 Costs***

DB2 costs for licenses are based on published prices of \$25,000 per processor for DB2 Enterprise Edition, \$7,500 per processor for DB2 Workgroup Edition, and (for the two EPM user profiles employing parallel databases) \$32,500 per processor for DB2 Extended Enterprise Edition with Clustering/Partitioning option.

Software costs for all of these include update subscriptions and support based on 12.5 percent for the first year, and 25 percent per year for four subsequent years.

# Personnel Costs

Personnel cost calculations are based on the numbers of full time equivalent (FTE) DBAs for Oracle and DB2 shown in figures 20 and 21.

**Figure 20  
Numbers of DBAs: RISC/UNIX Users**

**FINANCIALS, HRMS & SCM/ERP USERS**

Organization	A	B	C	D	E	F	G	H	I	J
Oracle	4	6	4	7	5	5	4	3	2.5	2
DB2	2.5	4	2.5	4.5	3.5	3	2.5	2	1.5	1.5

Organization	K	L	M	N	O	P	Q	R	S	T
Oracle	3	2	2	3	2	3	1.5	1	1.5	1
DB2	2.5	2	1.5	2.5	1.5	2	1	1	1	1

**HRMS USERS**

Organization	A	B	C	D	E	F	G	H	I	J	K	L
Oracle	5	4	4	3	3	2	2	2.5	2	1.5	1.5	1
DB2	3.5	3	3	2.5	2.5	2	2	2	2	1	1	1

**FINANCIALS USERS**

Organization	A	B	C	D	E	F	G	H
Oracle	3	3	2	3	1	1	1.5	1
DB2	2	2	1.5	2	1	1	1	1

**CRM USERS**

Organization	A	B	C	D
Oracle	1	3	2.5	1.5
DB2	1	2	2	1

**EPM USERS**

Organization	A	B	C	D
Oracle	2	1.5	1	1
DB2	1	1	1	1

**UNIVERSITY USERS**

Organization	A	B	C	D	E	F	G	H	I	J	K	L
Oracle	5	4	4	4	3	3	3	2.5	2.5	2	2	2
DB2	3	2.5	2.5	2.5	2	2.5	2	2	2	2	2	2

Figure 21

**Numbers of DBAs: Windows Users**

**FINANCIALS & HRMS USERS**

Organization	A	B	C	D
Oracle	2	1.5	1	1
DB2	1.5	1	1	1

**HRMS USERS**

Organization	A	B	C	D	E	F	G	H
Oracle	2	2	2	2	1.5	1	1	1
DB2	1.5	1.5	1.5	1.5	1	1	1	1

**FINANCIALS USERS**

Organization	A	B	C	D
Oracle	1	1	1	1
DB2	1	1	1	1

**UNIVERSITY USERS**

Organization	A	B	C	D
Oracle	1	1	1	1
DB2	1	1	1	1

Cost calculations are based on annual average salaries of \$91,638 for Oracle DBAs and \$84,239 for DB2 DBAs. Salaries are multiplied by 1.298 to include benefits, bonuses, travel and related costs, and are calculated for a five-year period.

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