

The Impact of OS/Platform Selection on the Cost of ERP Implementation, Use and Management

Executive Summary



*Excerpt from Multi Client Study
Final Report
July 25, 2002*



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META Group Company Overview

Bottom-Line Guidance for IT and Business Transformation

META Group is a leading research and consulting firm, focusing on information technology and business transformation strategies. Delivering objective, consistent, and actionable guidance, META Group enables organizations to innovate more rapidly and effectively. Our unique collaborative models help clients succeed by building speed, agility, and value into their IT and business systems and processes.



Study Overview

For the purpose of this analysis, we have focused our comparisons on the HP-UX, IBM AIX, IBM OS/400, Microsoft Windows NT, Microsoft Windows 2000 and Sun Solaris environments. Based on respondent data, OS/400 has the lowest overall one-year and three-year Total Cost of Ownership per user in ERP environments. AIX has the lowest cost of ownership per user of the reported UNIX environments.

Introduction

The overall objective of this research effort was to have the ability to compare the actual Total Cost of Ownership (TCO) of various Operating System (O/S) environments supporting respondents operational Enterprise Resource Planning (ERP) systems. Over 2000 hours were invested by senior members of the META Group consulting and analyst team to define the objectives of the research effort, produce the survey instrument, contact prospective respondents, collect detailed data, analyze data and produce the final report. The respondent companies also invested thousands of hours of effort to provide META Group with accurate details about their environments. Without their cooperation and willingness to share information, this report would not have been possible.

Analysis Overview

The focus of the Total Cost of Ownership (TCO) analysis was on the cost of ownership of various O/S environments and the comparison of those O/S environments based on actual respondent data. META Group defined the O/S environment in this research effort to include server centric expenses for hardware, software, maintenance, application software, implementation and support services. The workstation and network components were deemed a “neutral factor” in the analysis and therefore not included in the survey process

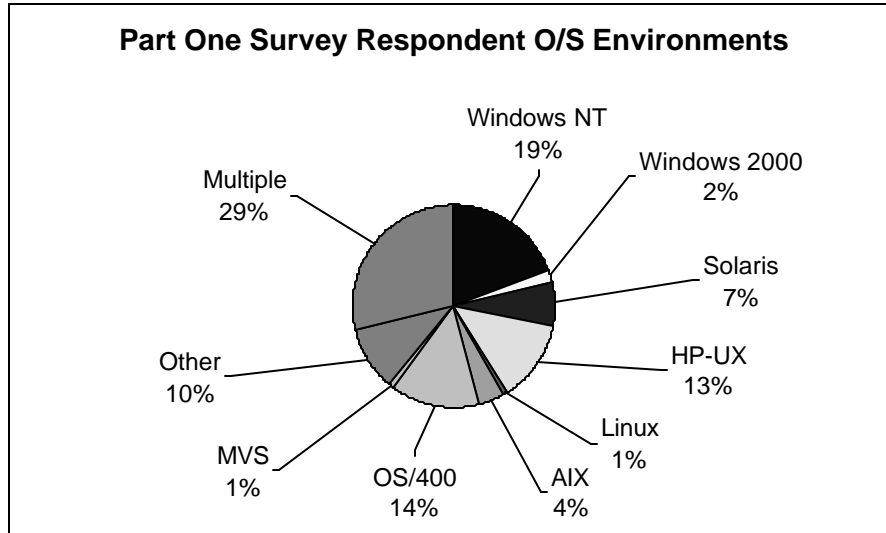
The “average number of concurrent ERP users” was the most consistent factor reported by respondent organizations to measure the value across different ERP environments. ERP systems are real time/on-line systems as compared to environments like Sales Force Automation (SFA) where many users can be working disconnected from a server complex on laptop computers. In the SFA environment the measurement variable for number of users would be more appropriately the “number of named or registered users”. During the analysis phase, the “number of concurrent ERP users” factor was used to normalize costs across all environments by dividing the cost elements by the “number of concurrent ERP users” to determine the average cost attributed per concurrent user.

Over half of respondents were not willing or able to provide detailed financial data on the cost of their ERP implementation. Almost all respondents were unable to provide quantifiable business benefits for their ERP implementation.



Survey Participants Demographics

META Group contacted over 12,000 domestic U.S. firms during the first half of 2001 to solicit participation in the primary study. The study sponsors provided no contact lists. Four hundred forty eight (448) companies completed the first part (Part One) of the survey that consisted of sixteen (16) questions focused on respondent demographic, environmental and decision-making process questions. In most respondent companies a single individual completed this section of the questionnaire.



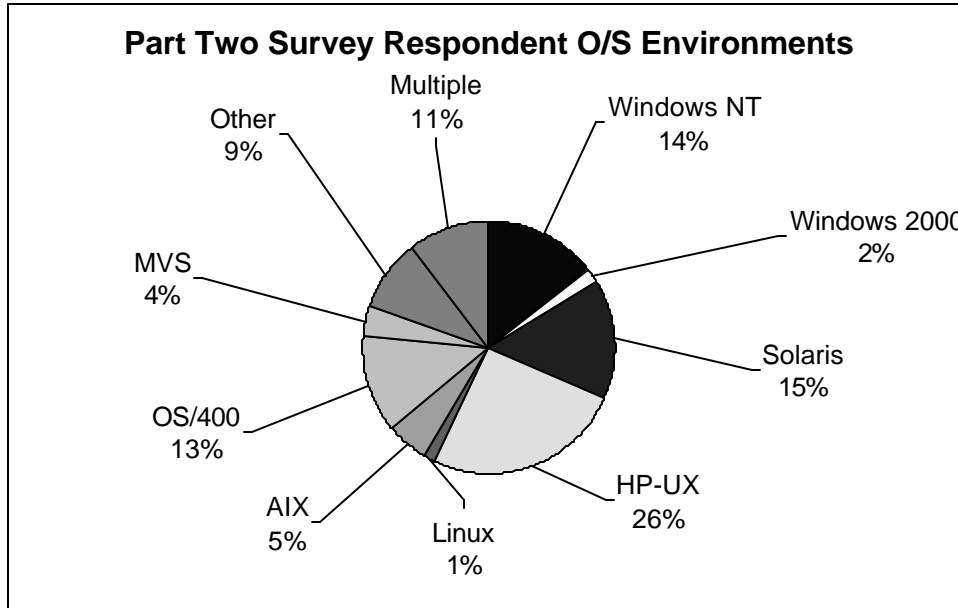
The Part One survey respondent data contained 128 respondents with “Multiple O/S” in support of the respondents ERP environments. Of those, AIX was installed in thirteen (13) organizations, OS/400 was installed in 22 organizations, HP-UX was installed in 42 organizations, Linux was installed in eight (8) organizations, MVS was installed in sixteen (16) organizations, Sun Solaris was installed in sixteen (16) organizations, Windows NT was installed in 94 organizations, and Windows 2000 was installed in 48 organizations.

Out of the 128 organizations (29% of Part One respondents), which used multiple O/S environments, the vast majority used Windows NT and/or Windows 2000 to support their Application Server environments. The Data Base servers were a mix of other platform environments including AIX, OS/400, HP-UX, MVS, Solaris and others. We believe these combinations indicate that the cost differences highlighted in the Cost of Ownership analysis sections of this summary factored into the respondent’s choice of Application Server environments.

One hundred ninety-five (195) companies (out of the original 448) completed the second part (Part Two) of the survey that consisted of seven (7) pages of detailed questions about costs, staffing requirements, and the platform particulars of the respondent’s ERP implementation. In most respondent companies multiple individuals participated in completing this section of the questionnaire.



Survey Participants (CONTD)



The “Multiple O/S” environments contain combinations of operating systems in support of the respondents ERP system. Out of the sixteen (16) organizations (11% of Part Two respondents) in this category, Sun Solaris was installed in three (3) organizations, Windows NT was installed in ten (10) organizations, OS/400 was installed in three (3) organizations, HP-UX was installed in four (4) organizations, MVS was installed in one (1) organization.

Industry Distribution

The bulk of ERP implementations were in manufacturing oriented companies independent of the type of manufactured goods or processes. In the META Group survey, manufacturing orientated respondents accounted for 53% (228 of 434 respondents) of all implementations while 47% (206 of 434 respondents) provided some sort of services to consumers or businesses.

Size Distribution

The range of company sizes (measured by corporate revenue) doing ERP implementations varied greatly - from less than \$10M to \$43B. 50% of all projects are in companies whose revenues ranged from \$500M to \$2B. Based on the respondents, the largest percentage of installed ERP applications is in companies with over 1,000 employees.



Staffing Cost Calculations

The O/S environment staffing costs have been calculated using respondent data to determine operational and support staff “Full Time Equivalent (FTE) allocations per active user” with an average FTE cost value of US \$78,000. A separate META Group research effort concluded that staff costs for Information Technologies (I/T) personnel were similar across O/S platforms for similar positions (Note: The staffing cost differences highlighted on pages eleven (11) & thirteen (13) are as a result of differences in the quantity of support staff attributed to the respective environment over time, not salaries). Average FTE cost was calculated based on a base salary of US \$60,000 plus an additional 30% uplift for benefits and other overhead.

Considerations

The following tables depict the “average cost per active user” segmented by O/S platform. The data is presented in summary defined by the respondent companies number of “active users.” In evaluating the data, we determined that the costs for ERP implementation with twenty (20) or less users across all O/S platforms were highly variable. To simplify analysis and reduce variability in the low end of the respondent active user cost ranges, we have excluded this data from the calculations.

The number of respondents using each operating system platform is not evenly distributed and not all respondents provided complete information. All charts and graphs are annotated to indicate the number of responses involved.

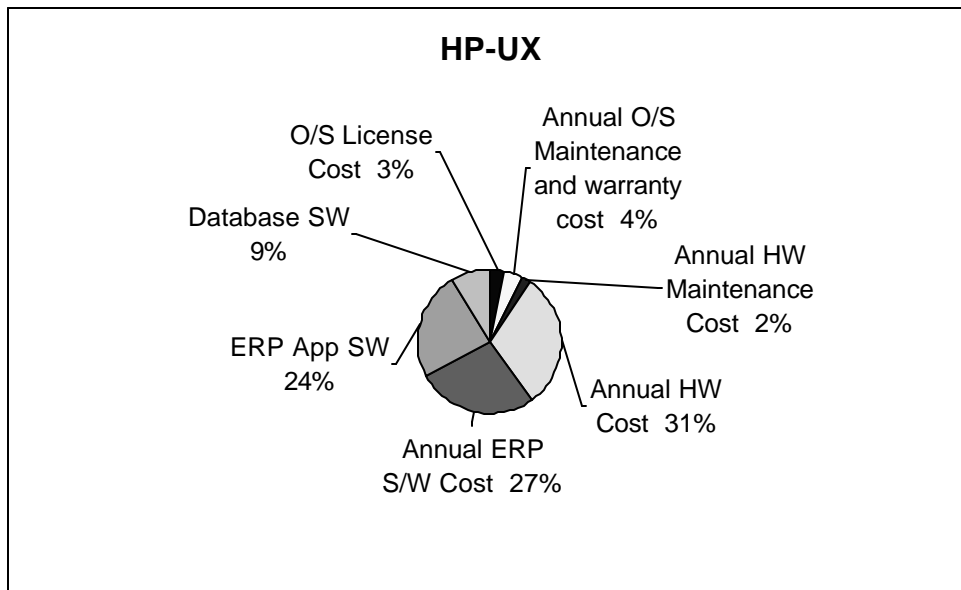


O/S Environments First-Year Cost of Ownership Analysis – Hardware and Software

For the purpose of this analysis, we have focused our comparisons on the HP-UX, IBM AIX, IBM OS/400, Microsoft Windows NT, Microsoft Windows 2000 and Sun Solaris environments.

The following tables represent the relative percentage of expenses for actual hardware and software “first year” cost elements provided by respondents, segmented by O/S environment. These include one-time O/S license cost, annual O/S maintenance cost, one-time server hardware cost, annual hardware maintenance cost, one-time ERP software cost, annual ERP application maintenance cost and one-time database cost.

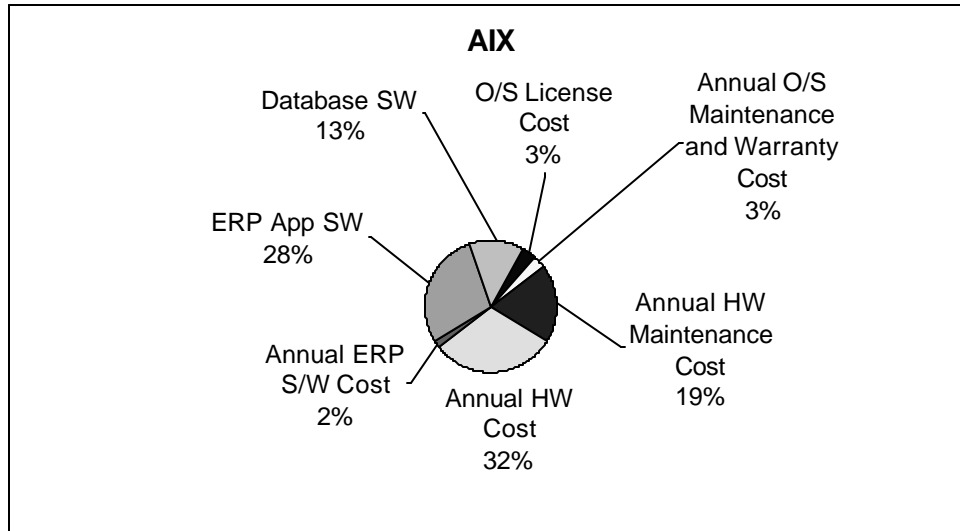
HP-UX One-Year Hardware and Software Total Cost Allocation



There were 34 respondents for this section. The majority of expense is related to the cost of the ERP application itself and associated maintenance (51%). The hardware and the O/S platform combined account for 40% of costs.

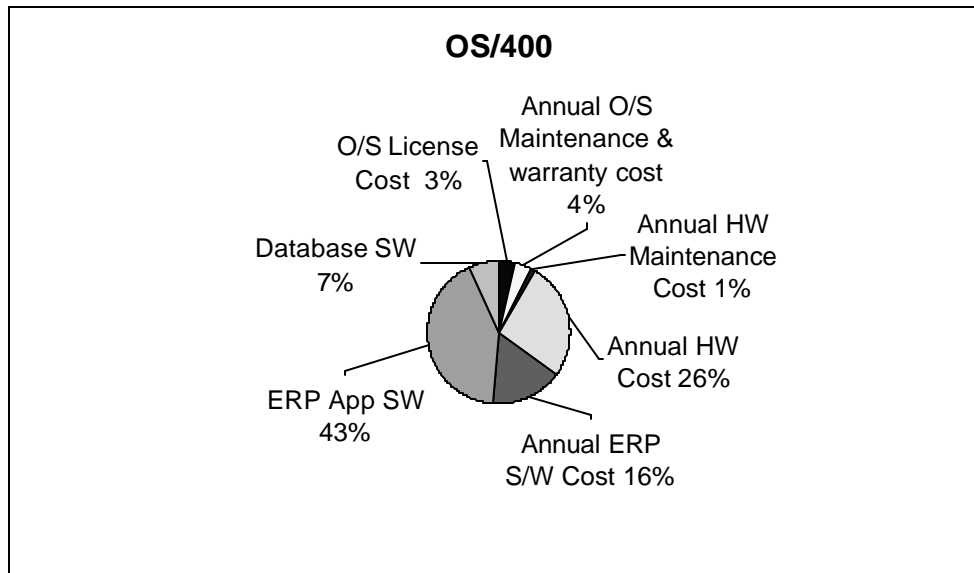


IBM AIX One-Year Hardware and Software Total Cost Allocation



There were 7 respondents for this section. The majority of expenses are related to the cost of the hardware and the O/S platform (57%). The ERP application itself and associated maintenance combined account for 30% of costs.

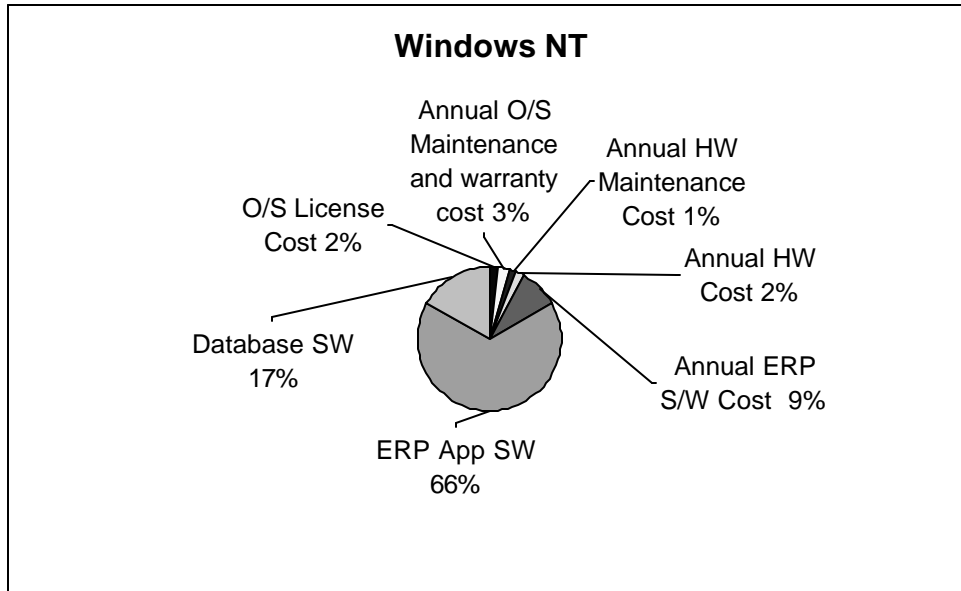
IBM OS/400 One-Year Hardware and Software Total Cost Allocation



There were 18 respondents for this section. The majority of expense is related to the cost of the ERP application itself and associated maintenance (59%). The hardware and the O/S platform combined account for 34% of costs.

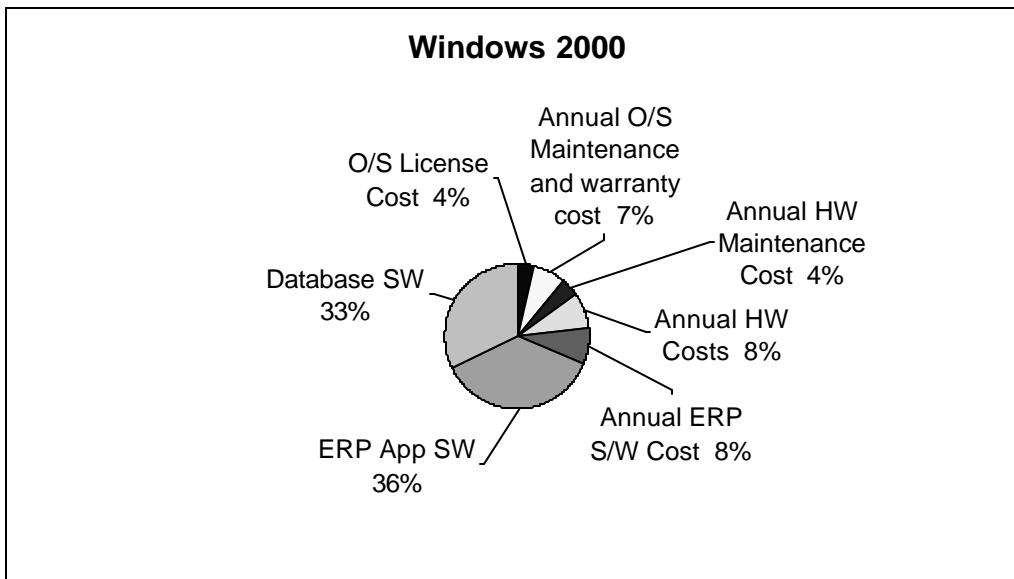


Microsoft Windows NT One-Year Hardware and Software Total Cost Allocation



There were 25 respondents for this section. The majority of expense is related to the cost of the ERP application itself and associated maintenance (75%). The hardware and the O/S platform combined account for 9% of costs.

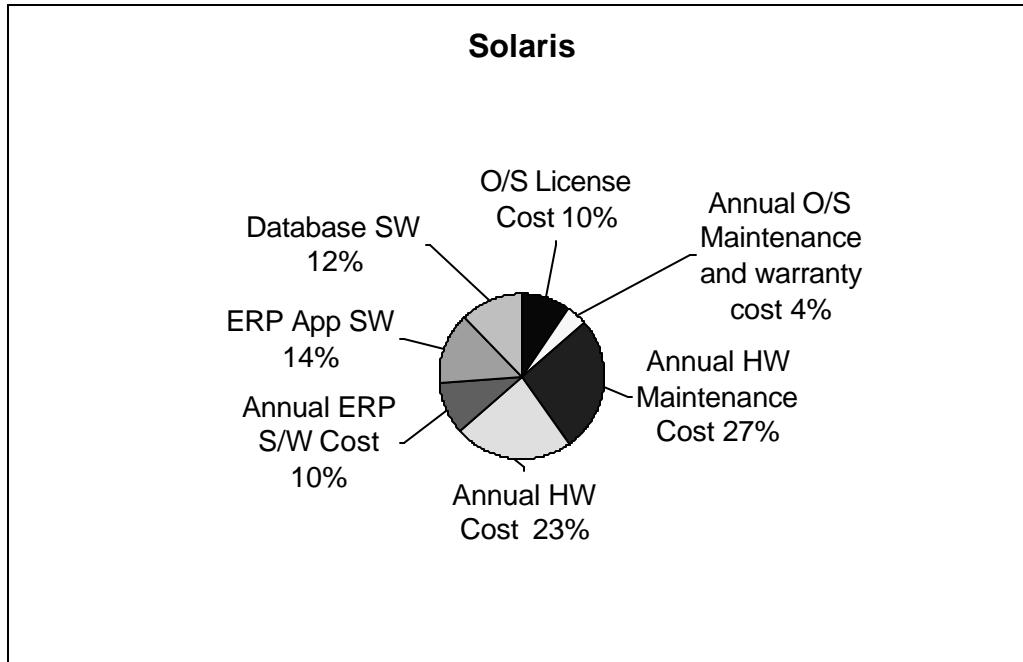
Microsoft Windows 2000 One-Year Hardware and Software Total Cost Allocation



There were 3 respondents for this section. The majority of expense is related to the cost of the ERP application itself and associated maintenance (44%). The hardware and the O/S platform combined account for 23% of costs. Given the small sample size, the confidence in the relative accuracy of the ratio is low.



Sun Solaris One-Year Hardware and Software Total Cost Allocation



There were 9 respondents for this section. The majority of expenses are related to the cost of the hardware and the O/S platform (64%). The ERP application itself and associated maintenance combined account for 24% of costs.

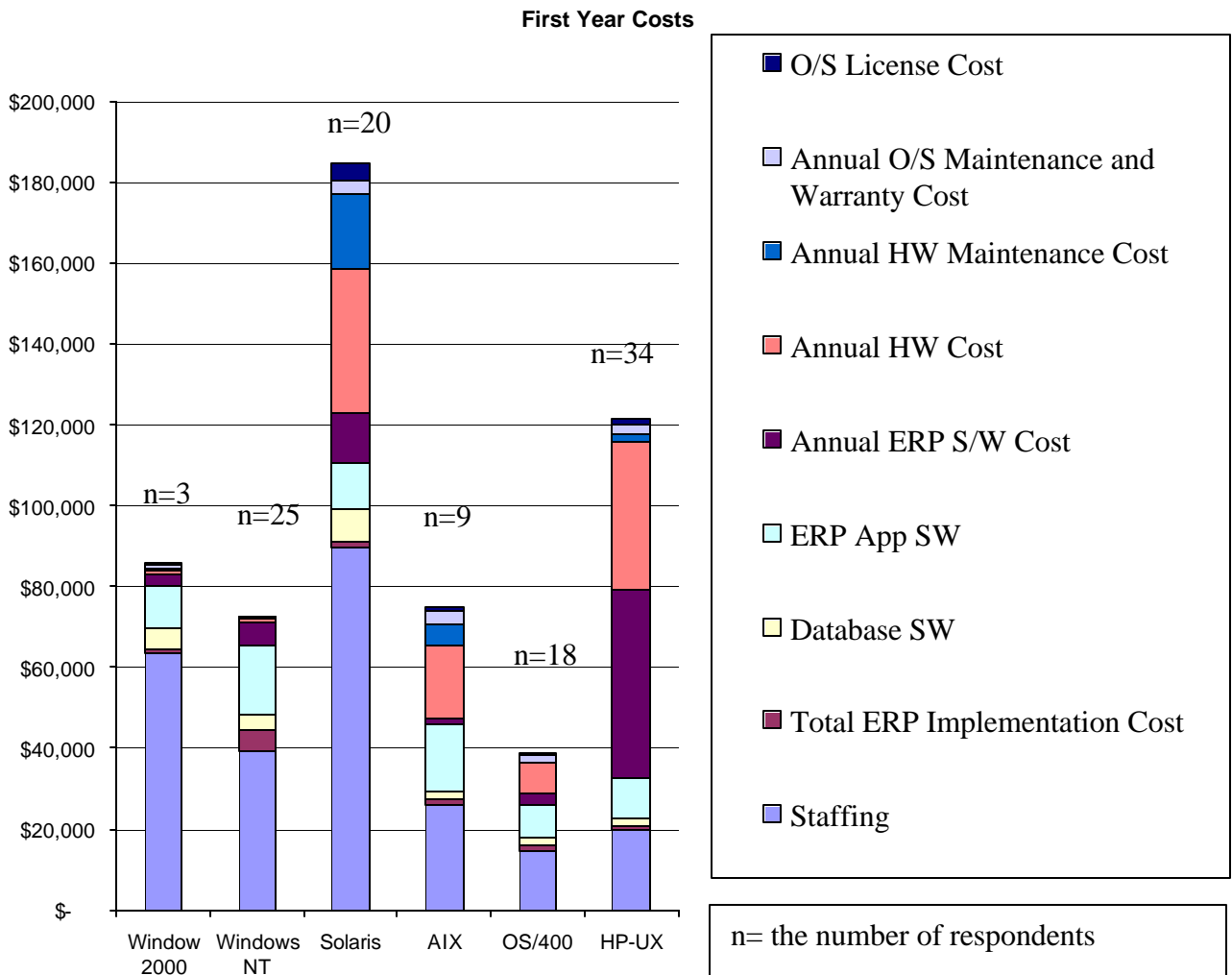


O/S Environments Total Cost of Ownership Analysis

One-Year Total Cost of Ownership Analysis

For the purpose of this one-year summary, we have focused our comparisons on the HP-UX, IBM AIX, IBM OS/400, Microsoft Windows NT, Microsoft Windows 2000 and Sun Solaris environments.

The following table represents the sum of all the hardware and software “first year” TCO cost elements provided by respondents and captured in the analysis. These include one-time O/S license cost, annual O/S maintenance cost, annual hardware maintenance cost, one-time ERP software cost, annual ERP application maintenance cost, one-time database cost, one-time implementation cost and Information Technology support staff allocation.





One-Year Total Cost of Ownership Analysis (CONTD)

The “number of concurrent ERP users” factor was used to normalize costs across all environments by dividing the cost elements by the “number of concurrent ERP users” to determine the average cost attributed per concurrent user. Based on respondent data for costs and user counts, comparisons of the one-year costs of each O/S environment yield:

- O/S License Costs – Windows NT had the lowest O/S license cost. In comparison to Windows NT, Sun Solaris was 35X higher, HP-UX was 13X higher, AIX was 7X higher, Windows 2000 was 5X higher and OS/400 was 4X higher.
- O/S Maintenance Costs – Windows NT had the lowest O/S maintenance cost. In comparison to Windows NT, AIX was 15X higher, Sun Solaris was 14X higher, HP-UX was 10X higher, OS/400 was 9X higher and Windows 2000 was 4X higher.
- Server Maintenance Costs – Windows NT had the lowest server maintenance costs. In comparison to Windows NT, Sun Solaris was 93X higher, AIX was 28X higher, Windows 2000 was 2X higher, HP-UX and OS/400 were about the same.
- Server Hardware Costs – Windows 2000 had the lowest server hardware costs. In comparison to Windows 2000, HP-UX was 48X higher, Sun Solaris was 47X higher, AIX was 24X higher, OS/400 was 10X higher and Windows NT was about the same.
- ERP Software Maintenance Costs – AIX had the lowest ERP software maintenance cost. In comparison to AIX, HP-UX was 33X higher, Sun Solaris was 9X higher, Windows NT was 4X higher, OS/400 and Windows 2000 were 2X higher.
- ERP Application Software Costs – OS/400 had the lowest ERP application software costs. In comparison to OS/400, Windows NT and AIX were 2X higher, Windows 2000, Sun Solaris and HP-UX were about the same.
- Database Software Costs – HP-UX had the lowest database software costs. In comparison to HP-UX, Windows 2000 and Sun Solaris were 4X higher, Windows NT was 2X higher, AIX and OS/400 were about the same.
- ERP Implementation Costs – HP-UX had the lowest ERP implementation costs. In comparison to HP-UX, Windows NT was 6X higher, Sun Solaris and AIX were 2X higher, Windows 2000 and OS/400 were about the same.
- Staffing Costs – OS/400 had the lowest staffing costs. In comparison to OS/400, Sun Solaris was 6X higher, Windows 2000 was 4X higher, Windows NT was 3X higher, AIX was 2X higher and HP-UX was about the same.

Overall, on a per concurrent user basis the OS/400 O/S environment has the lowest first year total cost of ownership. In comparison to OS/400, Sun Solaris is 5X higher, HP-UX is 3X higher, Windows 2000, Windows NT and AIX are 2X higher.

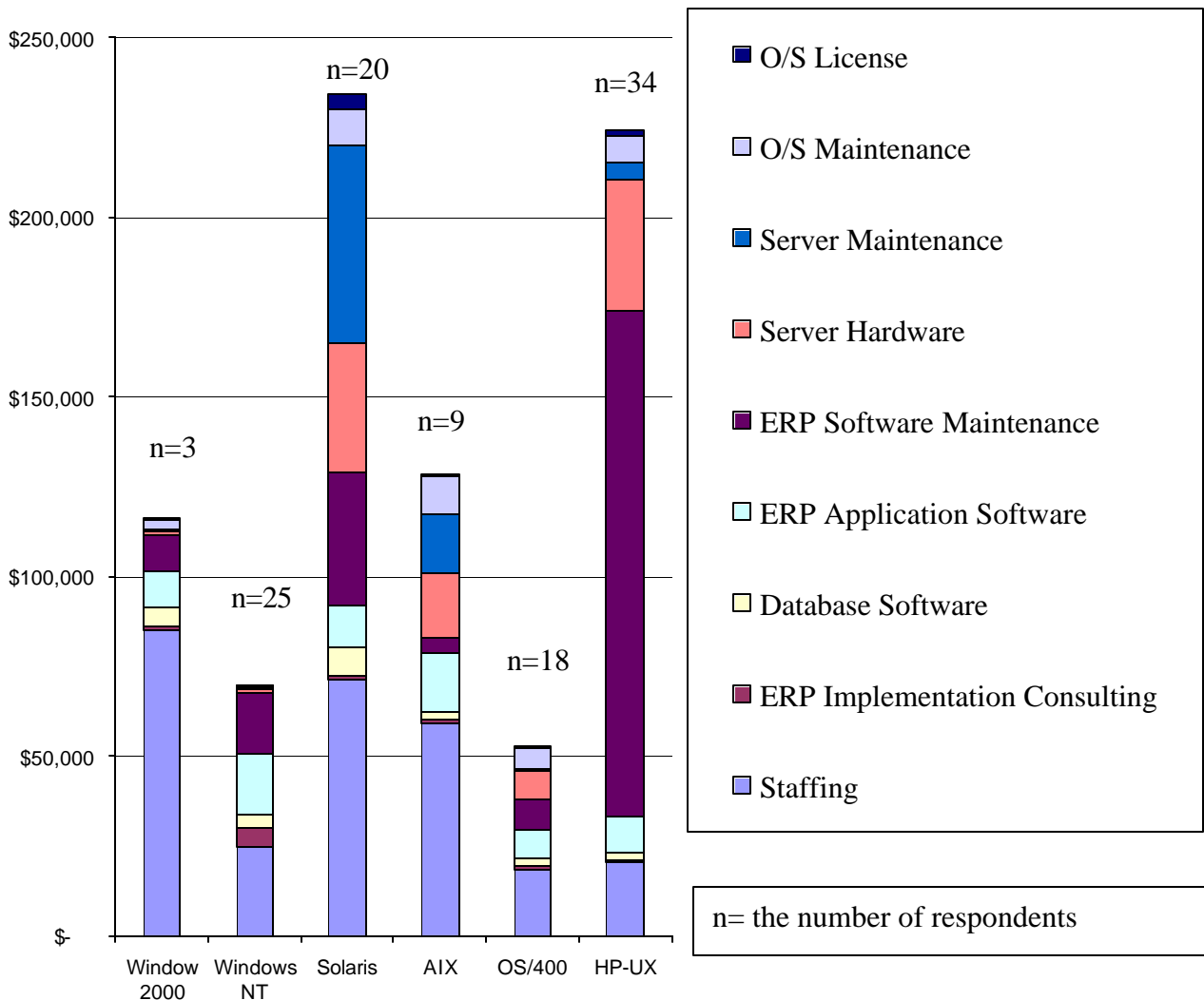


Three-Year Total Cost of Ownership Analysis

For the purpose of this three-year summary, we have focused our comparisons on the HP-UX, IBM AIX, IBM OS/400, Microsoft Windows NT, Microsoft Windows 2000 and Sun Solaris environments.

The following table represents the sum of all the hardware and software “three-year” TCO cost elements captured in the analysis. These include one-time O/S license cost, annual O/S maintenance cost, one-time server hardware cost, annual hardware maintenance cost, one-time ERP software cost, annual ERP application maintenance cost, one-time database cost and one-time implementation cost.

Three Year Costs





Three-Year Total Cost of Ownership Analysis (CONTD)

The “number of concurrent ERP users” factor was used to normalize costs across all environments by dividing the cost elements by the “number of concurrent ERP users” to determine the average cost attributed per concurrent user. Based on respondent data for costs and user counts, comparisons of the one-year costs of each O/S environment yield:

- O/S License Costs – Windows NT had the lowest O/S license cost. In comparison to Windows NT, Sun Solaris was 35X higher, HP-UX was 13X higher, AIX was 7X higher, Windows 2000 was 5X higher and OS/400 was 4X higher.
- O/S Maintenance Costs – Windows NT had the lowest O/S maintenance cost. In comparison to Windows NT, AIX was 15X higher, Sun Solaris was 14X higher, HP-UX was 11X higher, OS/400 was 9X higher and Windows 2000 was 4X higher.
- Server Maintenance Costs – Windows NT had the lowest server maintenance costs. In comparison to Windows NT, Sun Solaris was 187X higher, AIX was 56X higher, HP-UX was 17X higher, Windows 2000 and OS/400 were 2X higher.
- Server Hardware Costs – Windows 2000 had the lowest server hardware costs. In comparison to Windows 2000, HP-UX was 48X higher, Sun Solaris was 47X higher, AIX was 24X higher, OS/400 was 10X higher and Windows NT was about the same.
- ERP Software Maintenance Costs – AIX had the lowest ERP software maintenance cost. In comparison to AIX, HP-UX was 34X higher, Sun Solaris was 9X higher, Windows NT was 4X higher, OS/400 and Windows 2000 were 2X higher.
- ERP Application Software Costs – OS/400 had the lowest ERP application software costs. In comparison to OS/400, Windows NT and AIX were 2X higher and Windows 2000, Sun Solaris and HP-UX were about the same.
- Database Software Costs – HP-UX had the lowest database software costs. In comparison to HP-UX, Windows 2000 and Sun Solaris were 4X higher, Windows NT was 2X higher, AIX and OS/400 were about the same.
- ERP Implementation Costs – HP-UX had the lowest ERP implementation costs. In comparison to HP-UX, Windows NT was 6X higher, Sun Solaris and AIX were 2X higher, Windows 2000 and OS/400 were about the same.
- Staffing Costs – OS/400 had the lowest staffing costs. In comparison to OS/400, Windows 2000 was 5X higher, Sun Solaris was 4X higher, AIX was 3X higher, Windows NT and HP-UX were 1X about the same.

Overall, on a per concurrent user basis, the OS/400 O/S environment has the lowest three year total cost of ownership. In comparison to OS/400, Sun Solaris is 7X higher, HP-UX is 5X, AIX is 3X higher, Windows 2000 is 2X higher, and Windows NT is roughly 20% higher.



Conclusions

Total Cost of Ownership is only one of the drivers in the ERP operating system platform selection process. Rational management practices include comparative analysis of additional factors in operating system platform decisions. Those factors include, but are not limited to, an understanding of the strategic fit of this platform with the company's business, the support requirements for applications, the integration capabilities of the platform in the existing environment, availability requirements, and available technical skills.

The overall objective of this research effort was to have the ability to compare the actual Total Cost of Ownership (TCO) of various Operating System (O/S) environments supporting respondents operational Enterprise Resource Planning (ERP) systems. For the purpose of this analysis, we focused our comparisons on the HP-UX, IBM AIX, IBM OS/400, Microsoft Windows NT, Microsoft Windows 2000 and Sun Solaris environments. Based on respondent data, OS/400 has the lowest overall Total Cost of Ownership per user in ERP environments.

- For an average One year Total Cost comparison, OS/400 TCO is at least five-times less than Sun Solaris TCO, three-times less than HP-UX TCO and two-times less than Windows NT, Windows 2000 and AIX TCO's. AIX has the lowest cost of ownership per user of the reported UNIX environments.
- For an average Three year Total Cost comparison, OS/400 TCO is at least seven-times less than Sun Solaris TCO, five-times less than HP-UX TCO, three-times less than AIX TCO, two-times less than Windows 2000 TCO and about 20% less Windows NT. AIX has the lowest cost of ownership per user of the reported UNIX environments.

It must be noted that all data reported is representative of our survey sample only and may not represent the overall market. In our analysis we found that respondents can only accurately report on the data they know, in areas they are responsible. We found the ERP "environment" crosses job responsibilities and departmental boundaries within organizations. There were, in most respondent companies, no single individual responsible for managing and tracking all the ERP project related cost and benefits. Consideration then must be given for the propensity of the respondents to give their "best estimate" on cost elements that they don't directly manage.



META Group Corporate Overview

Bottom-Line Guidance for IT and Business Transformation

What We Do

Simply put, META Group helps companies transform their business through technology. Since 1989, we've provided consistent information technology (IT) research, analysis, and consulting so that our clients can accelerate the delivery of technology solutions — saving time and enhancing profitability.

Publicly traded (Nasdaq: METG) since December 1995, META Group offers proven models to ensure that organizations are fully prepared to seize market opportunities, counter competitive threats, and avoid expensive mistakes. Serving as each clients' personal radar screen, META Group monitors the IT/business world to deliver an accurate, unbiased view of what works (and what doesn't) to speed innovation and keep pace with the new economy.

Our dialog with thousands of IT users and vendors — ranging from global giants and government organizations to midsize companies and small, bleeding-edge technology vendors — provides us with the necessary perspective to offer comprehensive best practices. And because this dialog is ongoing, we're able to continually hone our vision and provide timely, targeted "best methods" for our clients' diverse challenges.

Every day, in more than 35 countries around the globe, META Group addresses thousands of complex issues for a growing client base. Our world-class, industry-leading analysts and seasoned consultants — the mindspring behind our quality research — provide the fresh thinking our clients need to surpass their performance goals.

Using a straightforward approach, we also provide the clear direction our clients need to transform their businesses. META Group is the only organization in the industry to deliver structured methodologies and innovative programs that speed the business transformation of our clients — ensuring continued effective performance as they change.