

WHITE PAPER

Server Cost of Ownership of Consolidation Workloads: A Total Cost of Ownership Study

Sponsored by: Unisys

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OVERVIEW

In an era of constricted budgets and economic downturn, business organizations remain cautious about information technology (IT) spending. In this business climate, quantifying the total cost of ownership (TCO) of their IT investments is increasingly important. Examining TCO — including hardware, software, and the cost of administration, support and maintenance — over the life span of the investment is a useful indicator of a solution's overall cost-effectiveness. In fact, it is more important than the system's initial purchase price or the cost of a lease (the cost of acquisition) because elements such as efficiency and productivity play important roles in evaluating TCO.

IDC recently conducted a study of two types of x86 servers: distributed, small x86 servers (with fewer than 8 processors) and scalable x86-based servers (with 8 to 32 processors) from Unisys Corp. These servers were running Microsoft Windows operating systems and a variety of specific workloads, including Microsoft SQL Server database, Microsoft Exchange email, Oracle8i database, and file/print.

The purpose of the study was to compare the costs of deploying, operating, and maintaining Unisys ES7000 servers with those of small, distributed x86 servers. The goal was to determine whether the Unisys server solution demonstrated a TCO advantage over time. Further, this study aimed to quantify that advantage, if found, and identify how it played out over the life span of the deployed solution.

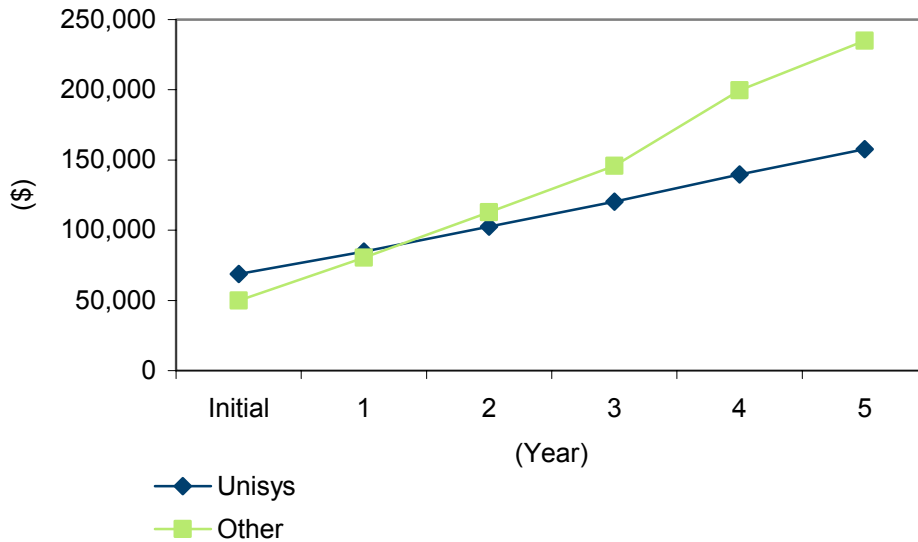
As a result of studying Unisys servers and other x86 servers deployed at 53 IT sites, IDC found TCO advantages for the Unisys ES7000 servers, as well as increased availability, IT staffing productivity, and lower cost of downtime, over time. Customers deployed the ES7000 with the expectation that it would have a longer life span than other types of servers that are based on industry-standard hardware and software components. IDC notes that the initial investment in the Unisys platform was greater than that of any of the individual, smaller x86 servers that were studied. Further, the Unisys ES7000 servers were deployed as scalable datacenter servers that are capable of running larger workloads than smaller x86 servers.

When we compared the installation of both types of servers, we found that the advantages of deploying the more scalable Unisys ES7000 servers became most apparent after the first two years of ownership. Across different workloads, the five-year TCO of the other servers is higher than that of the Unisys servers, as Figure 1 shows.

However, IDC notes that with Unisys' newest server models, the modular 500 series, which can be scaled up by combining 8-processor building blocks, users would have realized the TCO benefits even sooner — in the first two years of ownership (see IDC Analysis of the Effect of Unisys' New Pricing Range for ES7000 Servers section, page 4).

FIGURE 1

FIVE-YEAR TCO COMPARISON: ES7000 SERVER VS. X86 SERVER (COST PER 100 USERS)



Source: IDC, 2003

UNISYS ES7000 TCO BENEFITS

The companies in this study experienced significant advantages running the scalable ES7000 server, especially in multiworkload or complex workload environments. Examples include the following:

- ☒ In enterprises running a Microsoft SQL Server database workload, the ES7000's three-year TCO was 11% lower than that of distributed x86 servers, and its five-year TCO was 27% lower. The ES7000 five-year TCO was also significantly lower (65%) for companies that were running file/print workloads, primarily because they experienced less downtime (and thus higher availability of the file/print applications) and had fewer staffing requirements with the ES7000 than companies running distributed x86 servers.
- ☒ In enterprises running a multiworkload environment, the ES7000's three-year TCO was 22% lower than that of enterprises running distributed x86 servers, and its five-year TCO was 51% lower.
- ☒ IDC notes that this TCO study was conducted prior to the release of the Unisys ES7000/500 product line, which allows customers to acquire modular building blocks and to combine these modules over time to deploy more scalable systems. The building-block approach to scaling up server resources reduces the initial acquisition costs for the hardware itself, which, in turn, impacts TCO for customers. (See the IDC Analysis of the effect of Unisys' New Pricing Range for ES7000 Servers section and refer to IDC bulletin *Unisys Introduces the ES7000/T500 Family — A Modular Approach to Intel Xeon MP Mainframes*, IDC #29248, April 2003.)

The findings of this IDC TCO study of 53 customer sites using ES7000 servers highlight the business benefits of deploying an ES7000 for three years or more.

According to our study, the following factors contribute to the lower TCO of Unisys ES7000 servers:

- ☒ **Greater efficiency.** Unisys systems offered more than five times the IT efficiency of the distributed x86 servers, which generally had fewer than 8 processors. IDC measured this efficiency in terms of the number of users that were supported for each full-time equivalent (FTE) IT position. Each Unisys FTE supported an average of 5,670 users compared with a total of 2,550 users per FTE on the other systems.
- ☒ **Greater productivity.** Users of the ES7000 server experienced 63% higher levels of system availability than users of other x86 server systems. IDC notes that high availability of applications and data has a direct, positive effect on user productivity because fewer IT resources are deployed to restore availability, in the event of planned or unplanned downtime, and because end users can continue to work productively without interruption from computer outages.
- ☒ **Lower cost of downtime.** The cost of downtime was also considerably lower on the Unisys systems than on the x86 servers, a trend that is consistent over the five-year study period. The total costs of downtime at the three-year mark and at the five-year mark were more than twice as high for other x86 systems as they were for the Unisys systems.
- ☒ **Lower training costs.** Because the Unisys ES7000 servers offered stable operations and required relatively little IT support, training costs associated with the ES7000 were found to be less than half of the costs of the other x86 server environments. Further, the use of Microsoft Windows operating systems on the scalable Unisys servers allowed the IT sites studied to leverage the existing skill sets of programmers and system administrators rather than requiring the hiring of system administrators with new and/or different IT skill sets. Thus, they were able to reduce costs associated with additional training and education.
- ☒ **Longer life.** Unisys ES7000 systems, in the form factors that were studied, tended to be replaced every 5.9 years. This life cycle is much longer than the average of 3.2 years for other x86 server systems.

The TCO advantages delivered by the ES7000 servers are attributable to the following characteristics of the system:

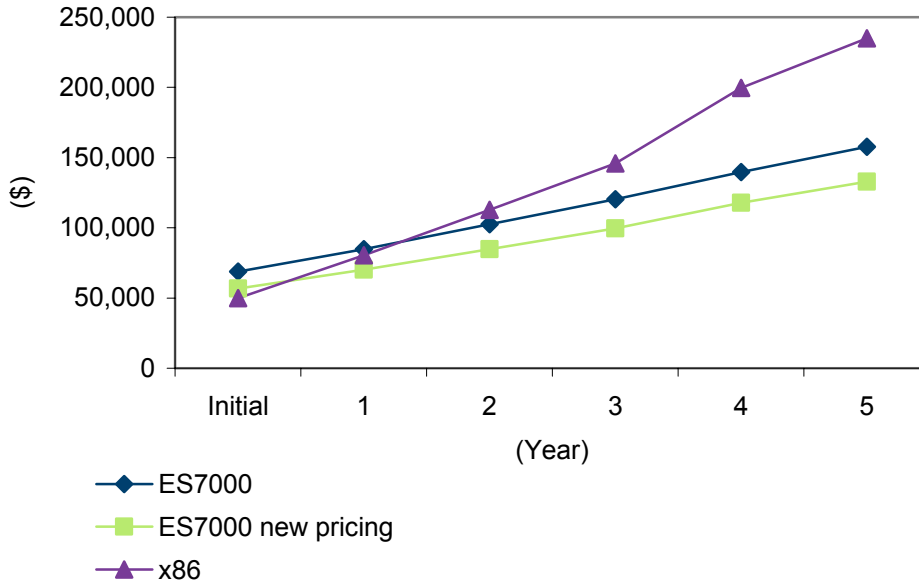
- ☒ It supported more end users than the distributed x86 servers.
- ☒ It required fewer IT staffers to manage it than the distributed x86 servers.
- ☒ It provided significantly higher levels of uptime than the distributed x86 servers.

SUMMARY OF RESULTS

Despite higher initial costs of acquisition, the Unisys ES7000 systems demonstrated overall lower TCO at the five-year mark as well as superior TCO in several specific elements contributing to overall costs. (At the same time, IDC notes that the revised pricing schedule for the ES7000 series would have brought the TCO benefits to customers within the first two years of ownership, due to the lower cost of initial acquisition, as Figure 1A shows.

FIGURE 1A

FIVE-YEAR TCO COMPARISON: ES7000 VS. X86 VS. ES7000 NEW PRICING (COST PER 100 USERS)



Source: IDC, 2003

These elements of reduced TCO include IT staff time, total costs of deployment and ongoing operation and maintenance, and improved uptime. In general, downtime results in lowered end-user productivity and lowered IT productivity. Accordingly, the avoidance of downtime through deployment of a highly available system improved end-user and IT staffer productivity. The TCO total per 100 users is roughly equal across the Unisys and other Intel platforms for multiworkload configurations, with the cost advantage of deploying the scalable ES7000 systems becoming apparent in year five.

IDC ANALYSIS OF THE EFFECT OF UNISYS' NEW PRICING RANGE FOR ES7000 SERVERS

In April 2003, Unisys took the scale-up approach a step further by introducing four new models that use Cellular MultiProcessing (CMP) crossbar technology and run the Microsoft Windows 2003 operating system. The new ES7000/500 models deliver scalability through the addition of 8-processor "cells," which can be expanded — one at a time — to a total of 32 processors. These modular building blocks are designed to fit in standard 19-inch racks.

These new ES7000/500 models were not part of this IDC TCO analysis, but this new dimension of flexibility in the ES7000 product line should contribute to the ES7000's ability to continue to deliver lower TCO to customers and to do so more quickly than was possible with the previous ES7000 models, which carried higher price points. This modular approach will allow organizations to begin, if they choose, at a moderate price point and to scale up in a smooth and affordable fashion. High-speed interconnects, such as Gigabit Ethernet and Fibre Channel, give these ES7000/500 models the same kind of functionality that was available in other ES7000 models that were shipped in a single standalone "cabinet."

Running the Microsoft Windows 2003 Server operating system, Unisys' new ES7000/500 family is attractive to medium-sized enterprises looking to use centralized systems for consolidation projects running Microsoft-based applications. With an entry price of approximately \$35,000 and a different architecture from "scale-out" x86 servers, the Unisys ES7000/500 family is offering a modular approach to the adoption of Unisys' CMP architecture. This modular strategy makes Unisys' new machines appropriate for large organizations looking to build consolidation projects step by step. In this way, customers can choose to start with 8-processor models and to gradually build up a configuration to 16 or 32 processors. This gradual "scale-up" approach preserves the symmetrical multiprocessing (SMP) programming model for the development of scalable applications and single system image databases. At the same time, it allows customers to take a "pay-as-you-grow" approach to acquiring hardware resources.

Unisys' approach is very different from the scale-out strategies of some server vendors, and its SMP architecture, based on its CMP crossbar technology, has proved itself to be a good performer for 32-bit databases and 32-bit applications. The new pricing model for Unisys servers, and Unisys' gradual pay-as-you-grow approach to acquiring server resources, will bring the performance benefits of Unisys' scalable server architecture to new types of customers. These customers may be from the small and medium-sized business (SMB) segment or from business units within larger enterprises.

IDC TCO STUDY METHODOLOGY

IDC's goal was to compare the total costs of two computing environments over a period of five years. An environment was defined as a server platform, including both hardware and operating system, that delivers applications to a number of end users (in this study, including hundreds of end users). IDC compared the total costs of delivering Microsoft Exchange email, file/print, Microsoft SQL Server database, and Oracle8i database workloads using a Microsoft Windows operating system and Intel-based server hardware on both distributed x86 servers and ES7000 servers.

The approach to this TCO study involved interviewing companies that were running one or more of the workloads on ES7000 or distributed x86 servers. To ensure that we were conducting an apples-to-apples comparison of these platforms, we modeled the results by fixing all the variables but one — hardware — and any costs that were dependent on the hardware. These variables included the number of servers, support staff required, average IT staffer's salary, training costs, and availability of the application that was running on these platforms.

For each workload (e.g., the Microsoft SQL Server database), we compared the total costs of delivering the application to 4,000 to 5,000 users in conjunction with two to three other workloads for a period of five years. We also looked at a multiapplication environment that combined several applications running on single servers.

For this study, IDC interviewed 53 sites in the United States that were running both distributed x86 servers and scalable Unisys x86 servers. These sites had failover capabilities deployed for all applications and were running multiple types of consolidation workloads, including Microsoft SQL Server database, Microsoft Exchange email, Oracle8i database, and file/print.

These workloads were deployed with a failover capability because they were identified as mission-critical or business-critical workloads that would need to be quickly restored in the event of any downtime. IDC notes that system downtime can be caused by the failure of a hardware component, software component, power outage, or natural disaster. The failover software, which is a type of high-availability clustering software, allows the application or workload to be brought online on an

alternative server resource, following a brief period during which the workload is "failed over," or restored, on alternate computing resources.

Typically, such failover times range from subminutes to several minutes, depending on the type of application being restored. Often, databases take the most time to restore on an alternate server because failover times can require many minutes. However, the ES7000's low downtime during daily operation and its failover capabilities ensured that customers experienced little, if any, disruption due to outages, compared with running similar workloads on smaller, distributed x86 servers.

ES7000 Platform Overview

Unisys introduced ES7000 CMP servers in CY2000 as highly scalable platforms capable of running the Microsoft Windows Datacenter operating system across as many as 32 Intel microprocessors. The ES7000 was one of the most scalable systems available in the worldwide server marketplace. Further, its balanced system design and partitioning capability gave IT managers the flexibility of running workloads in single system image (as in the case of large databases) or within partitions in order to isolate those workloads (as in the case of packaged ISV applications).

These ES7000 Windows platforms ranged from midrange enterprise server models (defined by IDC as servers ranging in price from \$25,000 to \$500,000) to high-end server models (defined by IDC as servers priced at \$500,000 or more). Thus, the Unisys ES7000 platforms scaled from 8 to 32 processors and supported partitioning to allow for multiple workloads, some of which ran in separate partitions, as needed.

IDC notes that following the launch of this TCO study, Unisys announced and began shipping a series of server models, the ES7000/500 line, that have improved price/performance, compared with the Unisys systems that were studied in IT sites for this report. A separate analysis of the impact of that pricing change is included in the IDC Analysis of the Effect of Unisys' New Pricing Range for ES7000 Servers section, page 4.

Unisys' mainframe heritage allowed it to optimize this Intel-based server system, which is based on industry-standard components. The ES7000 uses fast interconnects, large buffers, and caches, as well as systems management software — Unisys Server Sentinel — that monitors computer performance and that reallocates workloads across the system, as needed, to optimize performance.

System configurations for the ES7000 begin at around \$35,000, which falls within the low range of IDC's midrange enterprise server category (now defined by IDC as servers priced from \$25,000 to \$500,000). However, a fully configured system with 32 processors can be priced at \$500,000 and beyond, putting the server into IDC's high-end enterprise server category.

ES7000 Aries and Orion models, introduced in CY2002, employ custom ASICs that contain system-specific logic that contributes to improved performance and throughput. These ES7000 systems are built around a highly symmetrical model that allows customers to scale up to 32 processors, with high levels of reliability, availability, and serviceability (RAS). The systems support the addition of processors within the server cabinets in a capacity-on-demand model, allowing customers to scale up over time. The ability to create up to 8 partitions, depending on the ES7000 model, allows flexibility in configuring and managing workloads to support changing application requirements.

IDC also notes that the CMP architecture is different from the cc:NUMA approaches of Unisys' larger competitors, which are now in the process of launching larger Itanium 2-based server machines. Unisys already sells several Itanium 2-based server models, along with Xeon MP-based models and some models that allow customers to mix 32-bit Xeon MP and 64-bit Itanium 2 partitions in the same cabinet.

Unisys' ES7000/500 Product Family

Specifically, Unisys' ES7000/500 product family now includes the following models:

- ☒ 510, with 4 to 8 processors (rack optimized)
- ☒ 520, with 8 to 16 processors (rack optimized)
- ☒ 530, with two 16-processor configurations (rack optimized)
- ☒ 540, with 16 to 32 processors (rack optimized)
- ☒ 550, with 16 to 32 processors (cabinet based)
- ☒ 560, with 16 to 32 IA32 processors and 8 to 32 Itanium 2-based processors (cabinet based)

The ES7000/500 product line exhibits a high degree of granularity in terms of the capacity that is provided, given that customers can decide to build up the rack-optimized models on a cell-by-cell basis — with 8 processors in each cell. Alternatively, customers with immediate requirements for scalability can acquire a cabinet-based model with up to 32 processors. In the 560 model, up to 32 64-bit Itanium 2 microprocessors can be included within a cabinet — including two partitions with up to 16 Itanium 2 processors each.

Value Proposition of the Unisys ES7000 Server Platform

The value proposition of the Unisys ES7000 centers on the merger of Unisys' datacenter heritage with its experience in the Intel-based server space. Unlike many smaller Intel servers, the ES7000 offers many capabilities that are typically associated with larger, more scalable systems. These include the following:

- ☒ Central-site manageability for all workloads
- ☒ Granular control of system resources
- ☒ High availability of applications and data

The manageability of the ES7000 is a key contributor to its low TCO. Unisys Server Sentinel provides a single point of administration that results in more efficient management and higher availability. Unisys Server Sentinel also allows administrators much finer-grained control of system resources than typical Intel servers.

The ES7000 easily and efficiently scales up to 32 processors that can be partitioned into "slices" of the server containing 8 processors each. Unisys optimizes these systems to enhance the scalability of business applications in a well-balanced system that provides sufficient processor power, memory, and I/O support to allow workloads to scale well as business demands grow.

The partitioning capabilities of the ES7000 make it easy to adapt the system to support changing workloads and changing business requirements. A 32-processor system can be configured into 8 separate partitions, with other partitioning schemes supported as well (e.g., those that contain 4 processors per partition). Partitions can be configured with different processors, different operating systems (e.g., Microsoft Windows or SCO UnixWare), or different workloads. Through the use of Server Sentinel, administrators can reassign system resources to handle variable workload requirements.

The ES7000 has proved very capable in server-consolidation projects and large-scale database applications. Unisys has shown that it has the expertise to craft a highly scalable and capable Intel-based server platform. Unlike smaller x86 servers, for which scaling requires sufficient bandwidth, cache, and buffers to link multiple systems together, the ES7000 can support growing capacity and performance needs in a much more seamless and easily managed way. The recently introduced modular systems should continue to offer stability and performance while allowing even greater scalability and flexibility than was possible before.

THE ES7000: A DIFFERENT COST MODEL

The Unisys systems have a higher initial acquisition cost than the distributed, smaller x86 servers because the Unisys systems are generally configured as more powerful and complex midrange servers, each of which carries a higher average system value (ASV). This is particularly true for Unisys' scalable servers, each of which has up to 32 processors within a single cabinet. (IDC notes that all of the Unisys servers studied were configured with 16 to 32 processors.) However, the use of capacity-on-demand configurations that support later in-place upgrades for servers configured with fewer active processors, and the use of the modular server designs, such as the new ES7000/500 models, will allow customers to further reduce the hardware acquisition costs that factor into the TCO calculations that are presented in this study.

As Figure 2 shows, hardware accounts for two-thirds of the five-year TCO of the Unisys ES7000, which is a much higher percentage of total cost than that of the other Intel-based x86 server systems studied.

The other cost elements — staffing, software, downtime, and training — are all lower for the ES7000 than they are for the other x86 server platforms, illustrating how these factors contribute to the overall lower TCO that is delivered by the Unisys ES7000 systems. For example, software costs are lower over five years for the Unisys systems, despite a higher initial investment to deploy them. Initial software licensing costs are generally much higher for larger systems. This is especially true for Microsoft Windows 2000 Datacenter, a scalable version of Windows 2000 that runs on the 32-processor ES7000 systems. The cost difference for software that runs on the two types of platforms — the ES7000 and the distributed x86 servers — narrows over time, however, as Figure 2 shows. Software costs often increase on smaller systems as more servers — and licenses — are added over time. Because the initial license cost of the Windows 2000 Datacenter operating system can top \$20,000, the license for this single software product can equal the initial purchase price of 20 smaller Windows 2000 licenses, each priced at about \$1,000. In addition, customers must purchase client access licenses (CALs) in packs of 10 or 20 for each of the Windows 2000 licenses they deploy on the smaller servers.

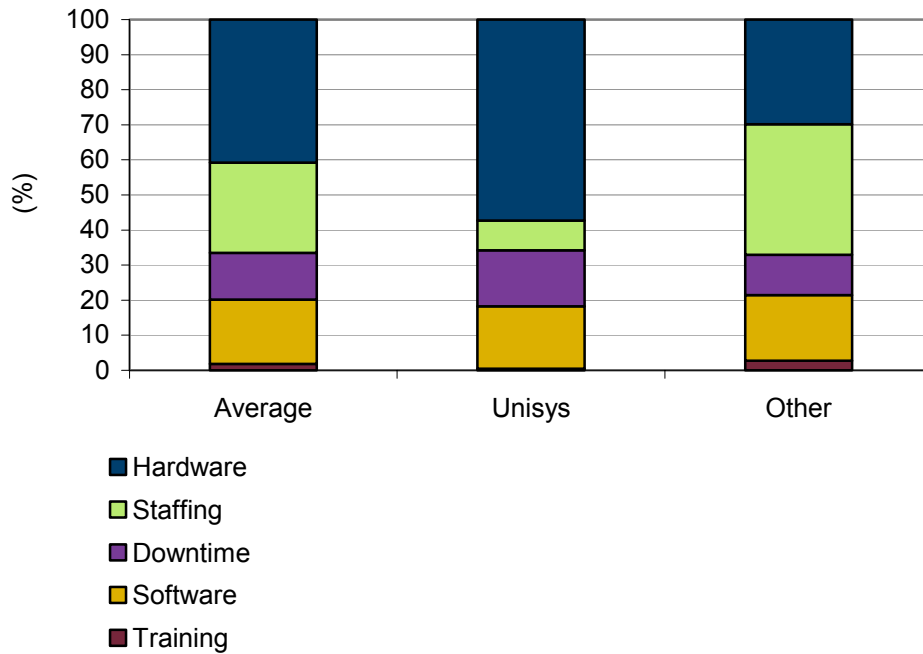
A DIFFERENT DEPLOYMENT MODEL

Organizations deploy fewer Unisys ES7000 servers than other smaller x86 servers, which is typical of installation patterns for scalable servers. Generally, a small number of scalable servers are deployed in IT datacenters, surrounded by hundred of smaller servers within the same business organization. IDC has found that having fewer servers improves overall TCO. With fewer servers to manage, companies have less risk of downtime (planned or unplanned) and less risk of operator error. A smaller number of servers are easier to manage, boosting efficiency and management effectiveness. Training costs for IT staff can also be lower because fewer technologies are present in the environment, and they remain consistent over time.

Unisys ES7000 servers have a life span of six years, which is nearly twice that of the other x86 servers studied. This longer life span can allow greater efficiency gains over time, with less investment in retraining staff or in acquiring new applications. Overall, by providing an efficient, robust, well-managed environment, the Unisys ES7000 servers offer lower TCO and greater efficiency than the smaller x86 servers, despite a higher initial system acquisition cost.

FIGURE 2

FIVE-YEAR TCO PERCENTAGE BY CATEGORY



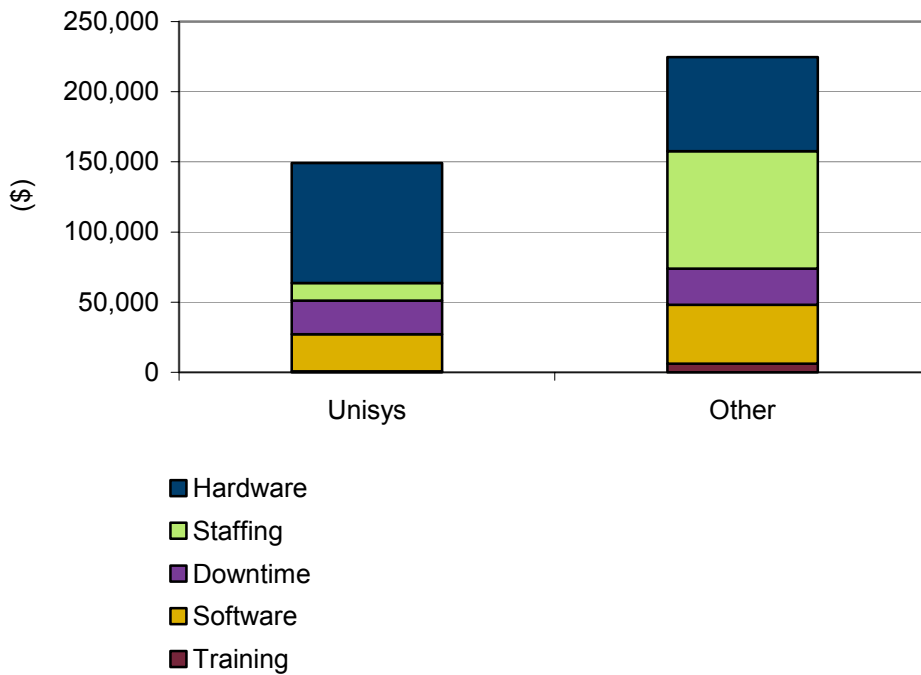
Source: IDC, 2003

Figure 3 shows the five-year TCO of Unisys and other Intel-based systems across all of the workloads studied by category. Although the total hardware costs were much higher for the scalable Unisys systems, the costs of the other elements were significantly lower on the Unisys server platform. There were substantial differences in the people-related costs of staffing and training, as Figure 3 shows.

Organizations saw efficiency gains as they scaled up their servers by increasing the capacity of existing systems, as opposed to scaling out computing resources by adding new servers. For example, they had less need to redeploy or hire staff to support new systems. This advantage is demonstrated in the lower training and staffing costs that were associated with the ES7000 servers. The self-managing capabilities offered by the ES7000 helped to keep IT staff costs low because fewer people were needed to manage the systems.

FIGURE 3

SERVER PLATFORM MULTIWORKLOAD FIVE-YEAR TCO BY CATEGORY (COST PER 100 USERS)



Source: IDC, 2003

A DIFFERENT VALUE MODEL — HIGHER PERFORMANCE = LOWER COST

The higher degree of reliability, availability, and serviceability (RAS) that is built into the ES7000 also contributes to lower staff-related costs. Less downtime and faster recovery time mean lower IT staffing costs. They also free up valuable IT resources to work on tasks that are of more strategic business value to the overall organization.

The ES7000 supports high availability through a number of technologies, including error checking and correction (ECC) code that is built into the system along with clustering and advanced partitioning capabilities. The self-checking and self-healing functionality that is provided by Unisys Server Sentinel system management software facilitates preemption of hardware and operating system failures as well as proactive responses to events that could cause downtime if unaddressed. Unisys Server Sentinel also monitors system performance in real time, and it helps IT system administrators to identify unusual system conditions that may be precursors of more serious events and that could lead to downtime if they are not addressed.

Tools such as Unisys Server Sentinel, along with Unisys Application Sentinel (which monitors application status) and Unisys Storage Sentinel (which monitors storage status), allow consistent, real-time management of an organization's environment. They not only boost availability of systems and applications but also help IT staffers to respond more quickly and effectively when operational conditions change.

PERFORMANCE METRICS

The performance metrics of the ES7000 demonstrate that it is an efficient system to operate. It supports a high number of users but requires fewer IT staff hours to support them. Specifically, the number of end users supported by each FTE is a good indicator of efficiency, as shown by the IT staff/end-user ratio. Table 1 shows that each IT staff member can support an average of 5,670 users on the Unisys ES7000 systems, compared with 2,550 users on the smaller, distributed x86 server systems. This finding translates into a more than 100% performance advantage for the Unisys ES7000 servers, compared with the smaller x86 server systems.

TABLE 1

COST/PERFORMANCE METRICS: COMPARISON OF UNISYS ES7000 AND OTHER INTEL SERVERS		
	Unisys ES7000	Other*
Users per server	1,289	740
Users per IT staff	5,670	2,550
Server operating life (years)	5.9	3.2

* The "other" category reflects data gathered from multiple x86 servers, when compared with single scalable ES7000 servers.

Source: IDC, 2003

GREATER AVAILABILITY AND LOWER COST OF DOWNTIME

One of the most significant advantages offered by the Unisys ES7000 is the high level of availability it confers on the business applications and data that run on it. Across all workloads, users of the ES7000 experienced less downtime than users of the distributed Intel platforms. As a result, the ES7000 also delivers a much lower cost of downtime to the IT organizations that deploy it. All types of organizations suffer losses because of both planned and unplanned downtime. The extent of the impact of downtime on user productivity depends upon the nature of the business that experiences the downtime. Lost user and IT staff productivity are always factors that result from downtime because employees lose access to the applications that they need to do their jobs. In other organizations, downtime has a direct relationship to the business' bottom line. In general, revenue is lost as long as business-critical applications and systems are unavailable to internal users, customers, and partners. For this study, IDC factored both lost IT staff productivity and lost user productivity into the overall cost of downtime. Lost revenue was not captured as part of this study because it was extremely variable across the businesses that were interviewed to gain the data for this TCO analysis. The cost of outside support also was not considered as part of this study because none of the sites surveyed deploy outside support resources. As Table 2 shows, the cost of downtime of the Unisys ES7000 is much lower than that of the other Intel servers.

TABLE 2

COST OF DOWNTIME: UNISYS ES7000 AND OTHER INTEL SERVERS (CALCULATED PER 100 USERS)

	Three-Year Total	Five-Year Total*
Unisys ES7000	\$7,518	\$12,367
Other	\$9,787	\$16,102
% difference	30.2	30.2

* Lost revenue due to downtime was not captured because of the wide range of companies and the vertical markets they represent.

Source: IDC, 2003

LOWER TRAINING COSTS

An environment that is efficient and easily managed can require less investment in training, as the Unisys ES7000 demonstrates (see Table 3). In an environment with smaller Intel servers, new servers must be added to accommodate new users, applications, or workloads. Additional training costs are associated with each expansion of the environment, as new technologies are introduced. By allowing expansion of capacity and addition of new workloads on existing systems, the Unisys ES7000 lowers training costs by not introducing the need for new IT skills.

TABLE 3

TRAINING COSTS: UNISYS ES7000 AND OTHER INTEL SERVERS (CALCULATED PER 100 USERS)

	Three-Year Total	Five-Year Total
Unisys ES7000	\$189	\$351
Other	\$1,419	\$2,639
% difference	355	355

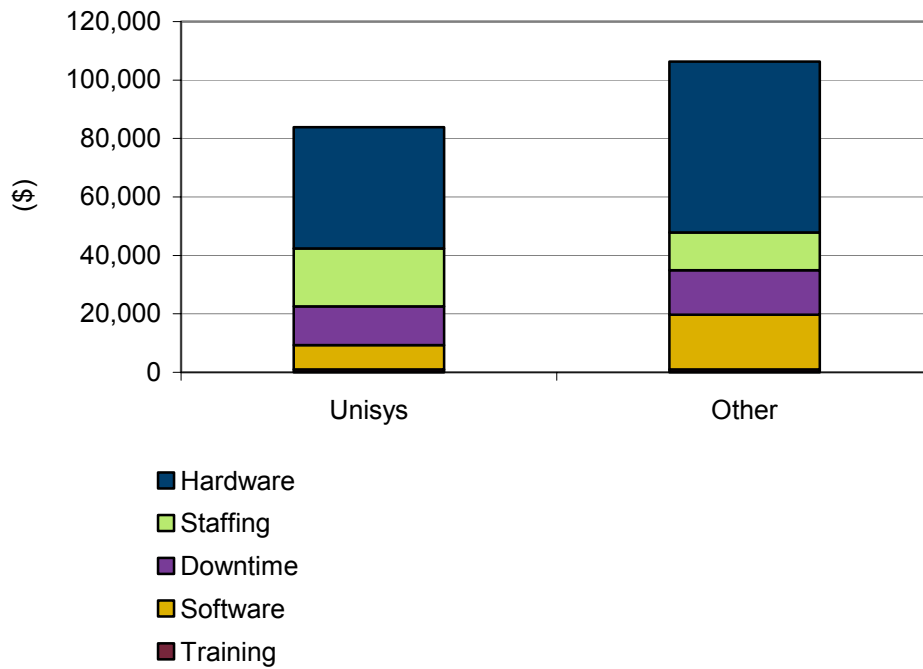
Source: IDC, 2003

TCO BY WORKLOAD

Despite the overall higher initial acquisition cost of the Unisys ES7000, the system has a lower TCO for SQL Server workloads through year five (see Figure 4).

FIGURE 4

SQL SERVER WORKLOADS FIVE-YEAR TCO BY SERVER PLATFORM (COST PER 100 USERS)



Source: IDC, 2003

Again, the Unisys systems included in this study were more expensive initially, but the hardware costs per 100 users decline significantly as the years of operation continue. As Table 4 shows, the Unisys systems have a hardware TCO advantage of 28.8% at three years of operation and 78.8% at five years of operation.

TABLE 4

HARDWARE COSTS PER 100 USERS, SQL SERVER WORKLOADS

	Initial	Three-Year Total	Five-Year Total
Unisys ES7000	\$19,782	\$31,266	\$38,502
Other Intel	\$10,316	\$40,259	\$68,846
% difference		28.8	78.8

Source: IDC, 2003

Scalability is especially important in database applications, which must manage an ever-growing need for capacity. As the SQL Server workloads grow and the number of users grow, companies using the Unisys systems will have less need to purchase new hardware because of the expandability and flexibility inherent in these systems. In the non-Unisys environment, companies must acquire new servers in order to support additional workload requirements, leading to overall higher hardware costs.

Lower software costs also contribute to the lower TCO of SQL Server workloads (see Table 5).

TABLE 5			
SOFTWARE COSTS PER 100 USERS, SQL SERVER WORKLOADS			
	Initial	Three-Year Total	Five-Year Total
Unisys ES7000	\$5,631	\$6,345	\$7,723
Other	\$18,837	\$21,904	\$24,832
% difference		245.2	221.5

Source: IDC, 2003

C H A L L E N G E S

The Unisys ES7000 is a scalable server; therefore, it faces the challenge of an overall softness in the market for scalable servers, which began with the economic downturn in 2001 and has continued into 2003. This continuing slow demand for traditional midrange and traditional high-end systems, compared to demand levels in CY2000 — which was the peak year in the worldwide server market — presents a challenge for Unisys' scalable servers, as well as for other vendors' scalable servers, during the economic downturn.

MEETING THE CHALLENGES

However, IDC believes that the newly introduced modular ES7000/500 systems will help to improve the TCO findings in this regard by reducing the initial hardware-acquisition costs. The new packaging of Unisys' scalable server technology presents customers with a powerful solution that is available at a reasonable price point that is well within the lower range of the midrange enterprise server marketplace (\$25,000 to \$500,000). That will encourage customers to install this technology at lower initial price points and to scale up over time as business demands require. Further, the new 500 series models will allow Unisys to sell servers with a broader range of price and capacity points than was possible before. IDC also notes that the Unisys-built interconnects between the "cells" of the rack-optimized 500 series systems will likely serve as a differentiator in competing with scale-up x86 server designs from other vendors. However, only a small number of x86 server vendors offer models with 8 or more processors, including IBM, NEC, and Hitachi. A slightly larger group of vendors will offer Itanium 2-based scalable servers. Another challenge for Unisys is demonstrating the business value the ES7000 delivers through lower TCO. The TCO advantage associated with deploying the scalable Unisys ES7000 servers used by IT sites operating the traditional ES7000 series platform in this IDC TCO study did not

become apparent during the first two years of the servers' installation. Further, this calculation was not inclusive of the lost revenue experienced by users of other x86 servers due to downtime (refer back to Table 2). Rather, the TCO advantages could be attributed to the efficient operational characteristics of the Unisys server solution, which became economically compelling over time, as the data tables in this white paper show. However, customers who deploy the new 500 series, which has lower price points, reduce the hardware component of TCO calculations (refer back to Figure 1A). Thus, they realize TCO advantages in the first two years of ownership.

Finally, the ES7000 will continue to compete with other x86 servers running Windows operating systems, with Unix servers, and with traditional mainframe server systems. Competition from other types of Windows servers will increase as vendors introduce systems that are competitive in price with the Unisys servers and begin to approach the functionality of the ES7000 over time. Since its introduction in CY2000, and until the introduction of the 500 series in 2003, the ES7000 has competed primarily in the midrange server and high-end server segments of the worldwide server market. Now, with the new 500 models, Unisys has entered the midrange enterprise segment of the market (servers priced between \$25,000 and \$500,000).

[Before 2003, IDC defined entry servers as those priced at \$100,000 or less; midrange servers as those priced from \$100,000 to \$1 million; and high-end servers as those priced at \$1 million or more. Starting in the spring of 2003, we revised our Server Taxonomy and began to track volume servers (those priced below \$25,000); midrange enterprise servers (those priced from \$25,000 to \$500,000); and high-end enterprise servers (those priced at \$500,000 or more). The revised IDC Server Taxonomy reflects falling average sales prices (ASPs) across all three segments of the worldwide server market. However, IDC continues to track the same 11 price bands that cover all three server market segments; only the mapping of price bands to the segments has changed.]

The scalable workloads that run on the ES7000 include online transaction processing (OLTP), database, and business intelligence (BI) applications. This competition between Unisys servers, Unix servers, and mainframe servers is likely to continue for the most scalable Unisys ES7000 models (those with 16 to 32 processors), although Unisys' modular server strategy makes the low end of the ES7000 server line much more competitive with low-priced x86 servers offered by other vendors.

Unisys must continue to build visibility for its entire ES7000 server line to gain a wider total available market (TAM) for its brand of scalable x86-based server technology. This effort will include expanding its channel partner network, which will help to promote the ES7000 platform to a broader set of IT customers, many of whom do not buy "direct" from server vendors. Unisys benefits from having established itself as a leader in the midrange Intel server market, with substantial ISV relationships already in place. Its relationships will provide Unisys with an advantage over other x86 server competitors, which may have broader channel coverage overall but which lack relationships with a full range of enterprise ISVs.

C O N C L U S I O N

The Unisys ES7000 has proved itself to be a capable, robust platform for server consolidation. Building on Unisys' experience with datacenter systems, the ES7000 goes well beyond the functionality of most low-priced x86 systems, also known as volume server systems (those priced at less than \$25,000), by offering a highly scalable, well-balanced, efficiently managed platform for supporting multiples types of business workloads — and by offering advanced system management to maintain uptime.

Despite a high initial acquisition cost for hardware and software, the ES7000 delivers a TCO advantage over three to five years, according to the 53 IT sites studied by IDC. This TCO advantage resulted from lower costs of downtime and training, greater management efficiency, and higher user productivity. These operational advantages are multiplied for Microsoft SQL Server database workloads, which benefit from the ES7000's ability to scale efficiently. However, IDC believes that Unisys' modular 500 server models, which are sold in lower price bands than traditional Unisys servers, will show even stronger TCO advantages over competing x86 servers running enterprise workloads, if TCO for those platforms is analyzed in the future. Therefore, IDC will continue to watch this space to track how these modular-style server products evolve from Unisys and its competitors and how their use impacts customers' TCO in the future.

Unisys must continue its efforts to establish market visibility for the entire ES7000 server line and to demonstrate the TCO benefits as an essential part of those efforts. Its 500 series modular systems, which allow a lower entry point and affordable scalability, will widen the market opportunity for the ES7000. As other vendors introduce x86 server systems that feature enhanced datacenter capabilities compared with current offerings, Unisys will be able to leverage the fact that it has already established itself as a leader in the scale-up x86 server market segment. Thus, the company is well positioned to take its value proposition of pay-as-you-grow computing power for Microsoft Windows server applications to a broader audience of IT professionals and business managers.

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