WHITE PAPER

Deploying an Effective Server Life-Cycle Strategy Will Minimize Costs: Leasing Is a Valuable Tool

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IDC OPINION

The IT industry is once again experiencing a rapidly shifting technology landscape, and many issues are still unresolved. However, even with technological uncertainty, a number of consistent customer themes — help grow the business, align with the business, manage risks, and reduce costs — remain imperatives for IT organizations. IDC's business value and IT leasing and financing research demonstrates that by understanding the true costs of server life cycles and implementing a leasing strategy, IT customers can tackle the cost reduction piece of this dilemma. Key findings in this study are as follows:

- Based on the real-world experience garnered from extensive IDC survey work about server life-cycle costs, IDC has determined that leasing two generations of x86 servers over six years costs 32% less than buying one server and keeping it for six years.
- Because the performance of processors continues to improve every year, organizations risk suboptimal performance of critical business applications and systems when they keep servers past their useful life spans or replacement cycles.
- Leasing x86 servers enables companies to track assets, establish upgrade plans, and remove older assets with minimal disruption. Leasing provides a level of automation, flexibility, and simplicity that customers need to reduce costs.

IN THIS WHITE PAPER

This IDC White Paper presents key financial findings drawn from in-depth research with hundreds of IT buyers across a broad spectrum of industries and the North America, Western Europe, and Asia/Pacific regions. The focus of the research is the life-cycle costs for x86 servers to include acquisition, deployment, annual support, and retirement costs. The analysis compares the typical cost structure for buying an x86-based server for one six-year life cycle with leasing the equivalent server capacity and performance for two three-year life cycles. Key topics in this White Paper include:

- Based on the real-world experience garnered from extensive IDC survey work, a comparison of leasing two generations of x86 servers over six years and buying one x86 server and keeping it for six years (The leasing model costs 32% less than the buy once model over a six-year time frame.)

- An overview of the advantages that server leasing can offer to IT organizations, including avoiding IT staff support costs that increase substantially as servers age. Although IDC's research indicates that organizations understand the value of their staff's time, they sometimes fail to account for it in making decisions about provisioning servers.
- "Lease versus buy" evaluation routines, required by many companies, remain a "spreadsheet" exercise that attempts to measure small differences in capital cost. However, they often gloss over inconsistencies in planned life cycles, related support costs, and decommissioning/recycling requirements that potentially distort operating expenses — and the outcome of the analysis.
- Best practices in selecting a financing provider

SITUATION OVERVIEW

As the industry embraces the 3rd Platform of computing, large shifts are occurring as organizations reengineer their solutions to incorporate the key dimensions of 3rd Platform computing, including mobility, big data and analytics, and social business/social networking.

Consumers are moving away from the pure Web-based front ends and are increasingly interacting via mobile devices and mobile apps. This pressures the lines of business (LOBs) to either provide mobile services to their customers or risk losing them to a competitor. The pressure is exacted to IT, which is tasked with building the needed mobile infrastructures.

At the same time, the LOBs have access to increasing amounts of data — mostly data about consumer behavior — from new collection methodologies that allow them to see new trends and market opportunities in near real time. The power to get ahead of an emerging trend with new offerings is today's competitive differentiation and a mission-critical challenge. However, to do so, LOBs need the compute power to analyze big data, and IT needs to deliver on that capability with powerful systems that provide high levels of RAS and agility to be provisioned for new workloads quickly.

Equally influential is the growing social environment in which today's businesses are operating. Their customers are engaged in massive social networks — increasingly, everything and everyone is connected, influencing each other more and more and impacting the markets in which enterprises operate in unprecedented ways. The ability to connect, interpret, engage, and influence is of critical importance for the future of any business. It is up to IT to deliver the tools to evolve the traditional business into a socially adept organization.

All these factors are also changing the concept of IT, with datacenters needing to become:

- More flexible to deliver multiple mission-critical capabilities in constantly changing workload ratios
- More scalable to deliver on and grow with emerging trends — and not just along a steady trend curve but also with low- and high-demand extremes
- More cost effective as many organizations implement never-ending cost-reduction scenarios (IDC research commonly finds that 60–80% of IT spending goes to operational and maintenance functions ["keeping the lights on"].)

The shift toward density-optimized systems, combined with rising energy costs, will result in power and cooling system requirements becoming just as important as performance and price in terms of purchasing criteria. Virtualization and multicore technologies will enable customers to migrate selected higher-end enterprise workloads from Unix and mainframes to x86 server platforms. The combination of these x86 technologies will keep x86 server growth rates above the growth rate of the overall market over the forecast period.

SERVER BUSINESS VALUE COMPARISONS

This section of the study provides an analysis of the operational costs associated with x86-based servers, including costs for support, deployment, retirement, and acquisition. The data, which provides the basis for analyzing typical costs for buying an x86-based server for one six-year life cycle or leasing for two three-year life cycles, is based on data from IDC's research projects with the support cost experiences of organizations based in the United States, the European Union (EU), and select Asia/Pacific countries. Survey findings are based on end-user experiences, with many IT professionals reviewing data on their operating environment as an average across a large portfolio of devices. The responses are not reflective of Dell equipment but rather an average for all systems from all vendors. In this study, the data presented is based on the age of the device — an analytic method not typically used and that produces results that can challenge "conventional wisdom" and preconceived notions of IT cost.

IDC chose to specifically exclude any direct economic costs associated with system downtime in this study because the value of downtime is both highly variable and subjective. Moreover, valuing downtime does not change the study's overall conclusion — it amplifies it. Notwithstanding this point, IDC has chosen to incorporate data about device failure rates, allowing readers to include downtime factors within their own analysis if they so choose. Also excluded from this analysis is the cost savings associated with upgrading to systems with better power efficiency. IDC acknowledges that the rising costs of power certainly impact the total cost of ownership (TCO), but for the purpose of the analysis in this White Paper, which is to focus on the economic impact of two different acquisition models, some typical "TCO" metrics have been excluded. Finally, IDC has not attempted to quantify the benefits associated with improved application performance due to server upgrades but has included a discussion of the types of benefits organizations report for application performance from deploying new servers.

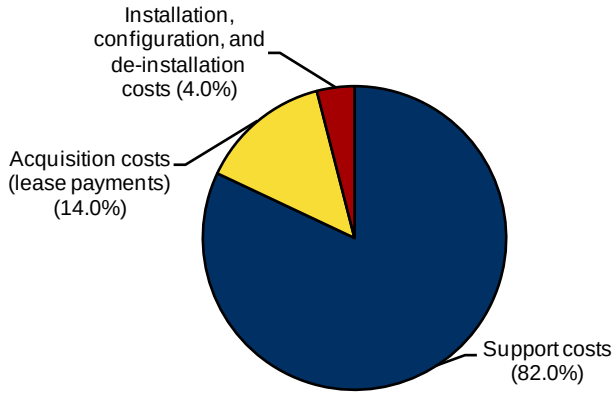
Server Support Costs

IDC takes into account a range of IT activities in measuring "support costs" for servers, including the monitoring and management of servers with the objectives of maximizing IT operational performance and minimizing the incidence of unscheduled downtime. Accomplishing these objectives typically requires extensive real-time monitoring of servers and other IT infrastructure, usually on a 24 x 7 basis for mission-critical workloads. Proactive support and update functions include virus protection updates, server operating system patch management, and numerous other tasks associated with upkeep. Remedial support functions include problem identification, analysis, patching, and repair or reconfiguration. Aggregating these costs over even a three-year time span demonstrates how costly providing this support is for organizations in terms of the value of IT staff time. Figure 1 indicates that IT staff costs for these support activities can be four times higher than the costs for acquiring servers and the installation/configuration/de-installation costs associated with the servers.

The key takeaway in Figure 1 is that the cost of supporting the operations of x86-based servers can far exceed the cost of acquisition. IDC's analysis shows that support costs make up 82% of the total cost for a two-processor x86 server deployed for three years. This ratio for servers is not dissimilar to what is found for other assets such as aircraft, large transportation vehicles, and automobiles, which also require extensive support to ensure high performance.

FIGURE 1

Two-Processor x86-Based Servers: Three-Year Total Cost Overview



Source: IDC, 2015

The Costs Associated with Supporting Servers Change with Time

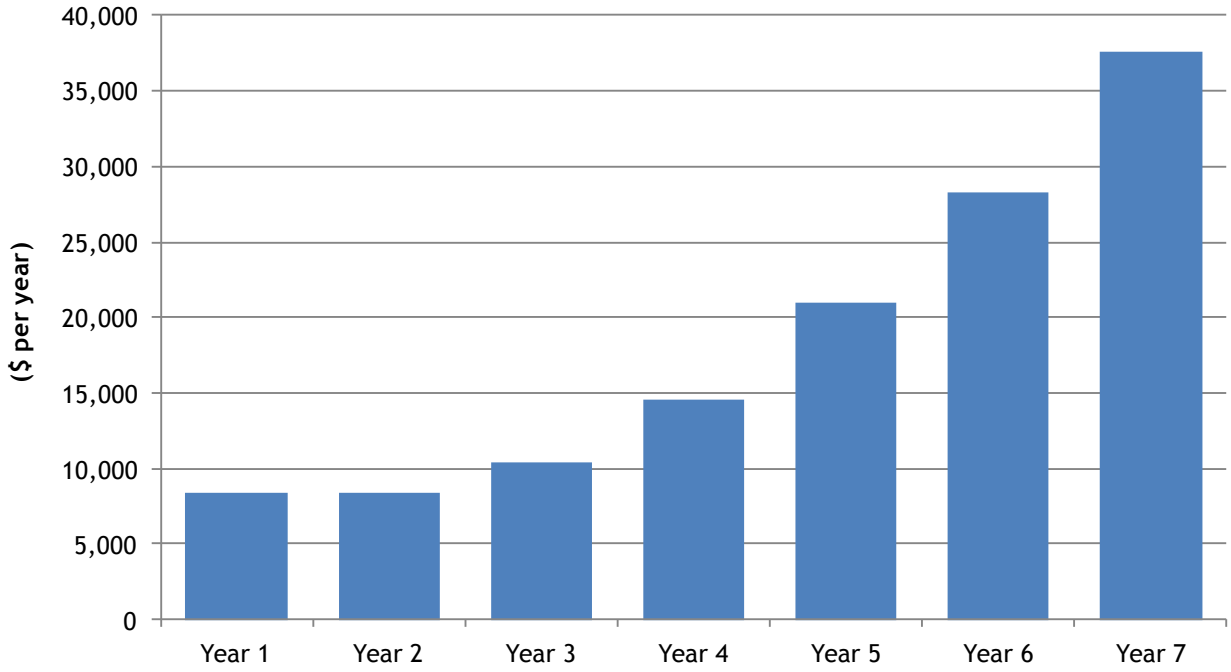
As servers age, support costs increase to an extent that many organizations may not understand. This is especially likely to be the case if an organization does not regularly correlate service incidents or support costs with the age of the underlying device. As servers age, support costs rise in line – with more issues related to operating system software and application software, more frequent patching operations, and issues related to upgrading to newer software on the same servers. The IT staff time costs associated with these activities steadily accumulate as servers age; more and more IT staff time is required to ensure that the servers meet availability requirements and are capable of supporting the demanding business applications being run on them. As a result, the time costs of server support are 264% higher on average in years 6 and 7 of an x86-based server than in years 1-3 (see Figure 2).

Like server support costs, unplanned downtime exerts a higher operational cost as servers age and their failure rates increase. Older servers are more likely to be offline than newer servers as they require more proactive reconfigurations and reactive repairs. Figure 3 demonstrates that unplanned server downtime occurs three times more often in year 7 of an x86-based server's life span than after deployment in year 1.

Figures 2 and 3 provide IDC's analysis of how server support costs and the occurrence of unplanned downtime change as servers age.

FIGURE 2

Average Support Costs per Two-Processor x86-Based Server

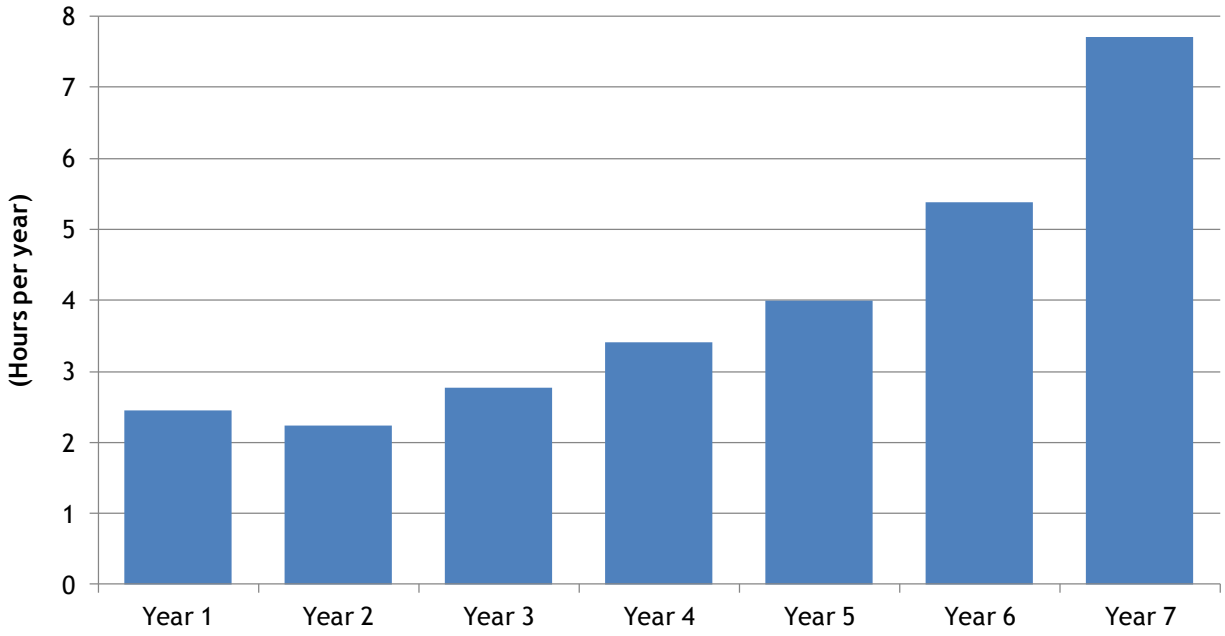


Note: Data is based on 200 users per server.

Source: IDC, 2015

FIGURE 3

Average Annual Downtime per x86-Based Server



Note: Data is based on average IT organization experiences with a number of different vendors and a variety of server types.

Source: IDC, 2015

Contrasting Server Operating Models

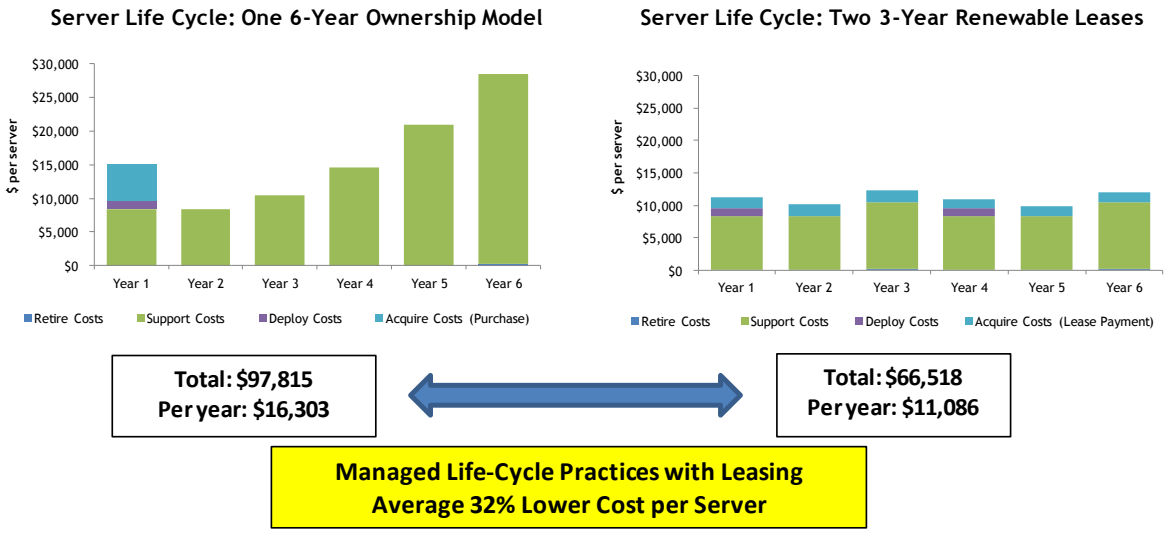
IDC provides a comparison of the costs associated with acquiring, deploying, supporting, and retiring a two-processor x86-based server in two different operating models: leasing two generations of x86 servers over six years and buying one x86 server and keeping it for six years (see Figures 4 and 5). These figures demonstrate where operating costs diverge for these two models; organizations using the buy once model will likely incur substantially more costs in terms of IT staff time needed to support servers. This reflects a difference in operating philosophy:

- IDC's discussions with IT executives indicate that they intuitively understand that older devices incur more repairs and, as such, require more staff time to support. However, some IT executives are not convinced that these costs are real – they feel that they best serve their organizations by drawing as much value as possible out of their capital investments, which can mean continuing to use servers beyond their useful life times or intended replacement cycles, even as support costs accumulate.
- IDC has found that modern IT organizations track, measure, and monitor their IT staff time to a degree that would surprise many other business functions. IT organizations have sophisticated systems management software to perform these tasks, allocate resource loading, and provide detailed reporting about staff utilization, efficiency, and effectiveness levels. This suggests that they understand the value of their IT staff's time but that they sometimes fail to account for it in making decisions about provisioning IT equipment, including servers.

Figures 4 and 5 show the extent to which higher IT staff support costs drive up operational costs for x86-based servers, particularly in years 5-6 of their deployments. It is worth keeping in mind that these time costs for support represent both a real cost and an opportunity cost: More IT staff time is dedicated to keeping the lights on and responding to problems with servers rather than engaging in more critical business initiatives, including driving innovation within their IT organizations. Based on the real-world experience garnered from extensive IDC survey work, the leasing model costs 32% less than the buy once model over a six-year time frame.

FIGURE 4

Comparison of Average x86-Based Server Costs: One 6-Year Deployment Versus Two 3-Year Renewable Lease Deployments



Note: Data is based on a two-processor x86-based server with 200 users per server. The buy once model is based on one server deployed for six years and owned. The leasing model is based on two servers, each deployed for three years and leased.

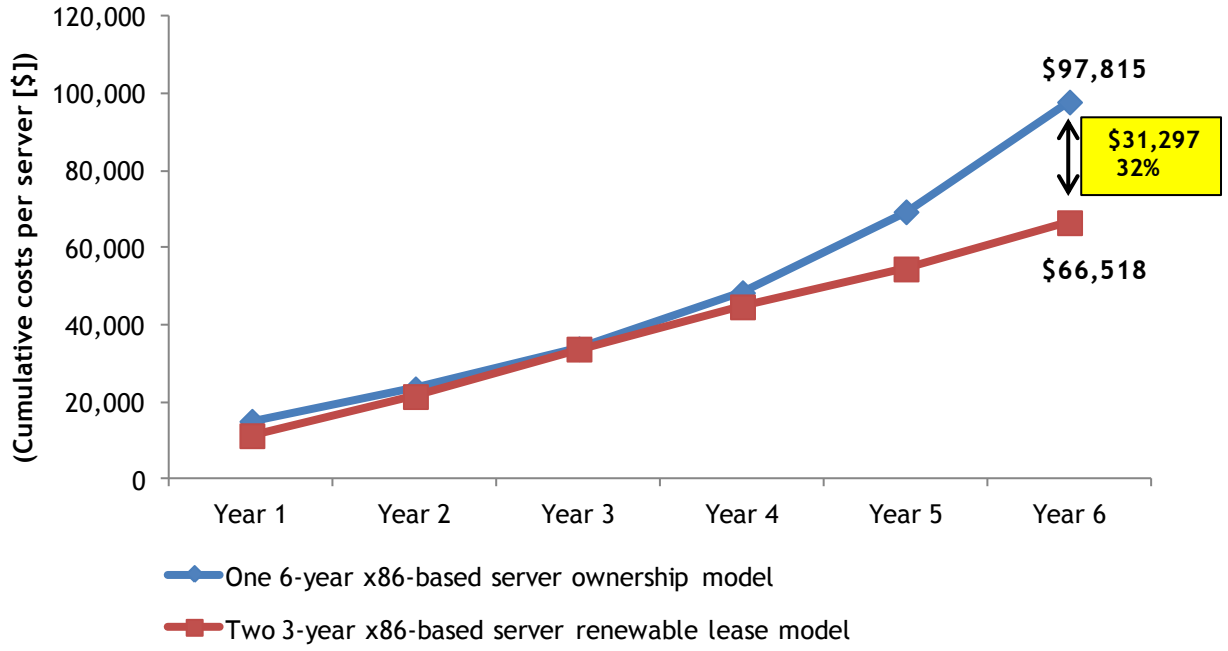
Source: IDC, 2015

The message in the data is that a two-processor x86-based server managed on a three-year systematic replacement cycle costs only 68% as much as a server managed on a buy once operating model.

Figure 5 demonstrates the extent to which escalating IT staff time support costs later in x86-based server life cycles drive the overall difference in operating costs between the buy once model and the leasing model.

FIGURE 5

Comparison of Average Cumulative x86-Based Server Costs: One 6-Year Ownership Model Versus Two 3-Year Renewable Lease Model



Source: IDC, 2015

The Cost of Unplanned Downtime

As discussed previously, IDC omitted the cost of downtime from the two operating models contrasted. For the servers discussed in this study, downtime averages 2.5 hours per year when they are new and climbs to more than 7.5 hours per year by year 7.

Some attempts to quantify the cost of downtime point to the economic consequences of a worst-case scenario such as the closing of an online store, a brokerage operation, or a similarly critical business environment. This line of reasoning often leads to an estimated downtime cost of $40,000 per hour or more. However, in typical deployments, it is highly unlikely that a single two-processor server will cause this type of outage with this type of financial consequence.

IDC has performed an extensive amount of research into this topic, and our best analysis suggests that devices of this type cost approximately $7,500 per hour of downtime. Further, IDC research shows that devices one to three years old generally incur around 2.5 hours of downtime per year. As a result, if the economic consequences of downtime were factored into the study, it is only meaningful to value the excess (above 2.5 hours per year) into a decision process.

IDC chose to exclude the cost of downtime from this analysis because of its highly variable nature and because it does not change the outcome of the analysis.

The Cost of Inefficient Power Consumption

The data and analysis in this study also do not factor the cost savings achieved by upgrading to newer equipment with a better power usage effectiveness (PUE) rating; however, IDC recognizes that greater efficiencies can be achieved by deploying equipment that utilizes technology that consumes less power, emits less heat, and contains management tools that regulate energy consumption.

Cost savings related to power consumption can be quantified in a number of ways and based on a number of factors, including whether they are consumption based or demand based and the types of IT workloads being supported. The range of savings can vary so widely that any meaningful analysis must be performed with a specific set of equipment in a specific workload and location. Emerging measurement metrics such as the SPEC SERT (server energy rating tool) can be used, along with the EPA's ENERGY STAR testing criteria.

As a frame of reference, recent IDC research has found that organizations upgrading to new x86-based servers are achieving power cost savings of up to 60% while increasing their compute power. Savings from power consumption is an immediate cost savings, with the associated cost savings of a server that emits less heat and therefore does not require additional cooling resources on top of that.

The Cost of Other Operational Inefficiencies

In addition to the costs associated with increased unplanned downtime and power consumption, organizations that extend server life spans risk incurring operational costs such as productivity losses from less efficient older servers. As with downtime and power, these costs vary too substantially to quantify for the purposes of this study. However, with the performance of processors continuing to improve every year, organizations risk suboptimal performance of critical business applications and systems when they keep servers past their useful life spans or replacement cycles. In research IDC conducted in 2014, we heard from a number of organizations upgrading to new x86-based servers about how they are benefiting from the better performance of important business applications. For these organizations, this performance bump translates into employee productivity gains and even an improved ability to serve their customers.

LEASING AND FINANCING PROVIDES FLEXIBILITY

Over the years, IDC has conducted multiple surveys to leasing and financing customers, and we ask about the top reasons that they lease or finance their IT equipment. The top 3 reasons are always remarkably consistent:

- **Protection against technology obsolescence:** Leasing offers a built-in renewal strategy for IT assets that saves money and risk from outdated technology infrastructure that cannot support new business initiatives.
- **Upgrade flexibility:** Leasing allows savvy IT organizations to depreciate equipment over the term of the lease and take advantage of the continually improving price/performance curve.
- **Budget/payment flexibility:** Aligning equipment costs with business initiatives is a common strategy within organizations today. Companies that lease their servers can quickly allocate the monthly costs to business units and also conserve capital.

Today these responses are even more critical as enterprises are now grappling with much shorter deployment cycles, faster project deadlines, and new equipment types. In addition, because of budget pressures, enterprise IT departments continue to look for ways to shift more IT spend from maintenance to business innovation. As the server business value data shows, enterprises that utilize a strategy of leasing two generations of x86 servers over six years save an average of 32% per server, with the majority of the savings coming from the reduction in maintenance costs and repairs in years 5-6.

As enterprises scrutinize IT spending and reconcile future expenditures, they often find that working with a financing provider adds a level of transparency to their asset costs. Utilizing leasing and an asset management strategy will ensure that enterprises have tools at their disposal that will provide them with an efficient server life-cycle strategy.

CRITERIA FOR EVALUATING LEASING AND FINANCING PROVIDERS

When customers make IT spending decisions, the focus is on solving business problems with IT. They want the IT financing provider to break from traditional leasing and financing structures and act as their trusted project partner, providing maintenance, service, and infrastructure in a unified transaction. IT organizations do not discern between assets and traditional leasing "rules" – they want a service that includes intangibles. Opportunities to offer a competitive differentiation exist in this market. Key demands for differentiation include the ability to deal with IT changes and prove value to management, solutions to manage equipment with a high degree of transparency, and flexible, nonrestrictive financing tools. In addition:

- **Technology expertise.** Different providers have unique IT infrastructures, underwriting practices, and used equipment management practices. They have also turned their business models to optimize the delivery of certain types of financing options. When IT organizations select financing providers, IDC recommends investing the time to understand their differing capabilities in structuring financing options for equipment, software, and services as well as the strength of their used equipment remarketing operations.

- **Lease management services.** IT financing is much more than the ability to lend money at a favorable rate. When financing IT equipment, software, and services, IT organizations also need to consider other factors, especially when large numbers of individual pieces of equipment are involved. Does the vendor offer data wiping services, assistance with software license management, and tracking of equipment serial numbers to support maintenance programs? Is there an online tool to handle different aspects of the transaction? What programs exist to simplify the acquisition and administration of large numbers of PCs or laptops? Lease management services are an essential component of a successful leasing engagement because financing involves an interface with many different business processes within a customer organization. Finally, streamlining lease and maintenance payments is a desirable feature many IT buyers seek.
- **End-of-life equipment and disposal options.** Aligning with a financing partner that offers secure equipment disposal is a key criterion for many companies. The downside risks of a data breach and/or fines from noncompliant equipment disposal are no longer tenable. Most customers find that a partnership with a leasing company removes these issues.
- **Geographic coverage.** The rising tide of globalization has greatly enlarged the middle class and expanded the lexicon to include terms like "emerging markets" and the "BRIC" countries (Brazil, Russia, India, and China). For many organizations, it has created unprecedented new opportunity and challenged them to extend their global reach. Because virtually all business processes are now enabled by IT, business cannot occur without IT being installed and functioning. To that end, careful evaluation of provider capabilities to support financing in major industrialized countries in North America, the EU, and Asia/Pacific is necessary. A select number of financing providers have the capability to provide integrated international business practices and processes.
- **Mobile apps and partner integration.** Over the past few years, the IT market has shifted toward a mobile-first strategy, and the leasing and financing industry is slowly adopting a similar outlook. For customers and partners, the ability to verify a lease transaction through a mobile platform reduces the time to close a transaction by a significant margin. In addition, the use of mobile apps also improves communication between vendors and partners, which may lead to increased business returns.
- **Terms and conditions.** Financing contracts contain common language regarding obligations, default, representations, and warranties. For many IT organizations, the first reaction to a "contract" is to forward it to their attorney for review. And while the decision to involve such experts is a sound business practice, many organizations overlook the need to clearly understand and assign the "contract management" responsibilities embedded in the terms and conditions to members of their team. Most providers are somewhat flexible in areas such as end-of-lease options, renewal terms, and return provisions. In some circumstances, the right to substitute identical equipment may be negotiated. It also serves both parties well if key terms are carefully defined and examples of how values are determined are included.
- **Administration and customer service.** Because their contracts typically last for two, three, or more years, IT finance providers are, by definition, long-term service providers. Administrative processes, within both the provider and the IT organizations, require commitment, follow-through, and investments — with regard to people, process, and technology. As the number of leased/financed assets increases, the complexity of successfully managing the service relationship grows concurrently. Therefore, a careful evaluation of the administrative infrastructure, online systems, tools and resources, and overall commitment to establishing and maintaining high levels of customer service forms an integral part of a successful leasing/financing engagement.

Although the preceding list is not exhaustive, it highlights major areas that IT organizations should consider before entering into a leasing/financing relationship.

CONCLUSION

IT is an industry where the one constant is change. With the transformation to the 3rd Platform, the pace of transformation has accelerated, and the speed of implementation and technology refresh must match the increasing speed of industry innovation and adoption. The long development and review times of the past are no longer tenable in today's fast-changing business and technology landscape. In addition, keeping installed IT solutions up-to-date through a consistent refresh program becomes more critical as new technologies increase system performance and capacity with decreased power consumption. Collaborating with a finance partner to share in the risk created by life-cycle shifts and unforeseen equipment introductions is integral to a more productive and efficient IT investment strategy.

IDC research underscores that leasing x86 servers enable companies to track assets, establish upgrade plans, and remove older assets with minimal disruption. Leasing provides a level of automation, flexibility, and simplicity that customers need to manage their IT assets.

METHODOLOGY

IDC's standard methodology was used to measure the costs associated with leasing and buying servers based on data collected from organizations using two-processor x86-based servers. To gather information used in this study, IDC asked organizations questions about their spending on servers (including hardware, IT support, and maintenance) and the performance of servers (including the amount of downtime). Responses to questions about how these metrics change over the life cycle of a server and about the age of servers being used by these organizations helped IDC calculate how the average costs and downtime of servers change over time.

For the data used in this study, IDC drew from hundreds of interviews that are conducted every year with organizations using IT equipment.

DEFINITIONS

- Acquire costs include the cost of server hardware and OS.
- Deploy costs include the time cost of deploying/installing servers.
- Support costs include the cost of monitoring/management of servers, scheduled and unscheduled maintenance, and problem remediation.
- Retire costs include the time cost of retiring/decommissioning servers at the end of their life cycle.

About IDC

International Data Corporation (IDC) is the premier global provider of market intelligence, advisory services, and events for the information technology, telecommunications and consumer technology markets. IDC helps IT professionals, business executives, and the investment community make fact-based decisions on technology purchases and business strategy. More than 1,100 IDC analysts provide global, regional, and local expertise on technology and industry opportunities and trends in over 110 countries worldwide. For 50 years, IDC has provided strategic insights to help our clients achieve their key business objectives. IDC is a subsidiary of IDG, the world's leading technology media, research, and events company.

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