INDUSTRY DEVELOPMENTS AND MODELS

IT Capital Investments: Evaluating Technology Life-Cycle Management and Lease-Versus-Own Options

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IDC OPINION

IT leasing and financing options remain important capital and budget management tools used extensively by IT organizations to better align requirements and resources, enable technology life-cycle replacement programs, and facilitate compliant equipment decommissioning and recycling programs. IDC believes IT organizations will increase their use of leasing and financing options through 2010 as a means to better address these financial, operational, and technical business requirements ultimately expanding the market to over $100 billion annually. To better understand the needs and requirements of IT organizations, and to put those requirements into a quantitative perspective, IDC recently conducted an extensive analysis of 206 organizations relative to their experience with and understanding of unmet IT leasing and financing requirements (see 2007 IT Leasing and Financing End-User Survey: Customer Needs and Wants, IDC #207435, July 2007). Correlating this statistical information with the extensive interactions IDC analysts have had with individual organizations, we found that one of the major gaps is that many IT organizations struggle to analyze the financial, operational, and technical issues surrounding IT investments as they strive to optimize their capital choices and evaluate leasing and financing options. In this study, IDC highlights key findings and insights into the capital evaluation challenge and provides recommendations for IT organizations searching for a more comprehensive lease-versus-own analytic framework:

- Existing lease-versus-buy analysis routines, often required for major acquisitions, remain, for many organizations, a "spreadsheet" exercise that attempts to measure small differences in capital cost while glossing over inconsistencies in planned life cycles, related maintenance and support costs, and tightening decommissioning/recycling requirements.

- Many business, financial, and IT leaders have not fully recognized the ongoing need and programmatic requirement for IT capital reinvestment, and they are confusing necessary infrastructure expenditures with optional "upgrades."

- IDC believes that by not integrating operational cost/performance data with life-cycle replacement planning and lease-versus-buy capital analysis models, IT organizations may be incurring 20.5% higher annual costs than necessary to acquire, manage, and decommission their IT equipment.
IN THIS STUDY

In this study, IDC highlights key findings and insights into the capital evaluation challenge confronting many IT organizations and provides recommendations for a more comprehensive lease-versus-own analytic framework and the related cost-reduction opportunities.

SITUATION OVERVIEW

IDC estimates that during 2007, nonconsumer spending for IT equipment will exceed $350 billion worldwide. Despite this level of spending, we have noted in two recent research projects involving 206 and 120 unique companies, respectively, that most IT organizations continue to struggle with IT technology life-cycle management — the business practices associated with capital planning, retirement strategies, and the evaluation of IT funding options such as leasing, outsourcing, and variable-capacity managed services.

We noted that IT technology life-cycle management practices are often less sophisticated and rigorous than those practices used to manage other "consumable" assets — such as commercial vehicle fleets — despite the fact that IT capital investments are often one-third of all capital expenditures for many commercial and governmental organizations.

LIFE-CYCLE ANALYSIS

Most organizations continue to purchase their IT equipment and then use a "standard" financially derived amortization period, typically five years, as a "life cycle" proxy. Once equipment has been acquired and capitalized and the amortization period initiated, most are loathe to replace equipment before its normal depreciation cycle is complete. As a result, IT equipment replacement/renewal cycles are typically not driven by an analysis of actual conditions experienced but by the calendar. Equipment that is unable to meet its workload requirements is often upgraded in place or repeatedly repaired, even though a life-cycle cost analysis would highlight cost-reduction opportunities by replacing the equipment sooner. IT technology planners, knowing that equipment will remain in place for five years or more, tend to specify new acquisitions with as much capacity as possible to maximize flexibility and reduce future in-place upgrades. IDC believes that these factors collectively create a situation that is unnecessarily expensive and potentially wasteful.

As part of the capital acquisition process, a comparison of equipment deployment scenarios is usually prepared. The analysis typically compares the cost of leasing the equipment with the cost of buying it and depreciating it. A nominal salvage value is usually assumed at the end of the comparative period (typically three years). When the costs of the two scenarios are compared, results are a toss-up. Minor differences in assumptions tip the balance to one scenario or the other. As a result, many organizations conclude, reasonably, that leasing versus owning is a similar value proposition. Given the additional complexity of leasing, they assume it would be better to own — hence initiating the cycle.
The reality, however, is quite different than the modeled scenario. In practice, IT equipment that is purchased is not deployed for the standard three-year period — even if the amortization is 36 months! Most companies "roll up" equipment purchased during the year and begin the amortization period on January 1 of the following year. Likewise, most organizations don't replace IT equipment the day the amortization is completed — that is often the time they initiate the renewal process. Collectively, the two delays add 6–8 months to a typical 36-month life cycle. In most organizations, the amortization for IT equipment is 48 or 60 months. With delays, the amortization period for owned equipment can be double what was considered as part of the lease-versus-buy analysis.

This disconnect — the fact that the typical lease-versus-buy financial models usually compare a 36-month lease with a 36-month ownership cycle where the ownership cycle can be, in practice, 6–32 months longer — ignores the fact that IT maintenance and support costs, deployment/decommissioning expense, and actual upgrade experience are not factored appropriately.

To better understand how these costs potentially impact IT equipment life-cycle analysis and affect technology life-cycle renewal cycles, let's first review how maintenance and support costs can vary based on length of time deployed.

**Maintenance and Support Costs**

Once IT equipment is installed, the obsolescence cycle begins. IDC research has found that IT support costs generally increase materially calendar quarter by calendar quarter. These increases are driven by mechanical failures as equipment ages; random errors in a system's software configuration as a result of power transients, user twiddling, or other factors; and, most importantly, the cost of updating software configurations as other changes within the (internal or external) IT infrastructure trigger the need for the device to be reconfigured or changed or (more) new software installed.

A recent IDC analysis of 120 IT organizations' desktop support and maintenance costs demonstrates how the maintenance and support costs for a typical PC can vary as a function of the age of the device. Table 1 highlights the average annual expense.

<table>
<thead>
<tr>
<th>Period</th>
<th>Average Annual Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>250</td>
</tr>
<tr>
<td>Year 2</td>
<td>350</td>
</tr>
<tr>
<td>Year 3</td>
<td>525</td>
</tr>
<tr>
<td>Year 4</td>
<td>650</td>
</tr>
<tr>
<td>Year 5</td>
<td>750</td>
</tr>
<tr>
<td>Year 6</td>
<td>800</td>
</tr>
</tbody>
</table>

Source: IDC, 2007
Deployment and Decommissioning Costs

Continuing with the analysis, the study analyzed the deployment and decommissioning costs and correlated them into a four-tier management model as shown in Table 2.

**TABLE 2**

**Comparative Cost Analysis of PC Deployment and Decommissioning Models**

<table>
<thead>
<tr>
<th>Managed Change Models</th>
<th>Description</th>
<th>Average Deployment Cost ($)</th>
<th>Average Decommissioning Cost ($)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Basic</td>
<td>Ad hoc, decentralized</td>
<td>678</td>
<td>200</td>
</tr>
<tr>
<td>Standardized</td>
<td>Some standard practices, centralization</td>
<td>522</td>
<td>150</td>
</tr>
<tr>
<td>Rationalized</td>
<td>Standard practices, centralized, integrated, some automation</td>
<td>426</td>
<td>100</td>
</tr>
<tr>
<td>Dynamic</td>
<td>Highly automated</td>
<td>260</td>
<td>50</td>
</tr>
</tbody>
</table>

Source: IDC, 2007

When evaluating each of these managed-change models, IDC research found the most variation within organizations identified as using "basic" operational models and the least variation with organizations employing "dynamic" models. This occurs because well-run organizations can only be "so good." Poorly managed organizations (i.e., "basic" operational models) varied more significantly.

In addition, the research highlighted that IT organizations with longer average equipment life cycles tended to use change management models that were less rigorous and hence more expensive. Organizations that established three-year life cycles and then systematically employed them clustered around the "dynamic" and "rationalized" management models realized lower average deployment and retirement costs.

**Upgrade Experience**

The third and final cost element that highlights the potential differences in actual expense during the deployed life cycle versus the modeled life cycle is mandatory upgrades. Because of the high cost and disruptive nature of upgrades, IT organizations strive to avoid this activity. Nevertheless, as the deployment length increases, the percentage of the portfolio requiring an immediate upgrade increases. During this IDC research study, we were unable to reliably measure the percentage of the portfolio that was upgraded. However, based on experiences with IT organizations, IDC's estimates are presented in Table 3.
### TABLE 3

**Estimated PC Upgrades by Years Deployed**

<table>
<thead>
<tr>
<th>Period</th>
<th>Portfolio Requiring Upgrade (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year 1</td>
<td>5</td>
</tr>
<tr>
<td>Year 2</td>
<td>10</td>
</tr>
<tr>
<td>Year 3</td>
<td>10</td>
</tr>
<tr>
<td>Year 4</td>
<td>10</td>
</tr>
<tr>
<td>Year 5</td>
<td>15</td>
</tr>
<tr>
<td>Year 6</td>
<td>15</td>
</tr>
</tbody>
</table>

Source: IDC, 2007

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**Factoring Operational Expense into Life-Cycle Analysis**

To provide an illustrative example, a $600 desktop PC managed with “basic” deployment and decommissioning practices, and supported, maintained, and upgraded based on the values provided in Tables 1–3, is compared with a similar $600 desktop PC that is leased and returned and then replaced with a $565 PC for the second three-year deployment.

The analysis, which is designed to highlight differences between two capital management options and not be a definitive financial analysis, shows an average annual difference of 20.5% between the two deployment scenarios (see Figure 1).

PC maintenance and support costs were taken from Table 1. There is a material difference between the two scenarios because costs increase each year. For the six-year scenario, the costs included for each year are as portrayed in Table 1. In the scenario where each machine was replaced at the end of three years, the cost of maintenance disclosed during years 1–3 was included for each machine. Because the newer machines required less maintenance, the average annual cost for PC maintenance and support was $375 during years 1–3. During years 4–6, the average cost increased more than 95% to $733 annually.

The point of this analysis is to highlight that lease-versus-buy analysis models should consider expected operational practices. For the purposes of financial analysis, there is always a desire to strive to isolate as many variables as possible to measure the “real” impact of the changed input. As this analysis highlights, the comparison of a programmed, cyclical replacement life-cycle management model implemented in a consistent manner with an ad hoc, largely situational replacement strategy demonstrates how operational expense factors can materially shift the outcome.
The underlying challenge with this type of financial analysis is that, for many organizations, there is a disconnect between modeled financial outcomes and operational practice. There is no reason why owned-versus-leased assets could not be managed in precisely the same manner with similar life cycles. The issue is one of practice. The finance department in a typical company is absolutely loath to sell or "debook" owned assets prior to the end of their scheduled depreciation schedule. There are a variety of reasons for this; however, none of them are regulatory. In attempting to discern the reasons for this reluctance to debook assets, two rationales emerged: First, the finance organization reported that it often does not have the staff, resources, or capability to easily manage all the accounting changes necessary to debook one asset as it impacted the general ledger, tax returns and, potentially, the property tax filings. Second, the financial implications are not significant "materiality."

Therefore, the challenge of creating an optimum IT capital management plan is to accurately model financial alternatives whether they are ownership, lease, or access via managed services contracts with realistic operational, financial, and technical assumptions. The outcome of this analysis suggests that overall expense can be reduced by shifting desktop PCs to shorter average deployment — in essence, as the famous Scottish economist Adam Smith might say, by trading more capital in the form of a shorter average desktop life cycle, IT organizations can reduce the related labor component and hence total cost.
FUTURE OUTLOOK

Based on our recent surveys and ongoing interaction with IT organizations, IDC believes that many business, financial, and IT leaders have not fully recognized the continuing need and programmatic requirement for IT capital reinvestment, confusing necessary infrastructure expenditures with optional "upgrades."

For a variety of reasons (described below), IDC believes there will be a more or less continuous pressure on IT organizations to systematically renew and reinvest in their IT equipment portfolios — beyond the need to simply match IT capacity with business processing requirements:

- **IT infrastructure compatibility.** Modern business has evolved into an increasingly interconnected and specialized business process model — with IT forming the basis of the communication platform. The importance of this shared platform has implications: IT requirements are increasingly defined both externally (by other members of the business ecosystem) and internally (by the organization itself). Because the organization is no longer a technology island, the requirement to move to a new version of a particular software application may be driven by customers, suppliers, or other business intermediaries. The choice to defer a infrastructure upgrade can imperil the ability to "conduct business."

- **IT equipment evolution.** IT manufacturers recognize that the expense and complexity of configuring and managing IT equipment is an issue for IT organizations. For IT providers, this need presents a business opportunity as they continue to focus their product innovation energies on increasing performance, reducing installation complexity, and lowering ongoing support costs. The fruits of these efforts, besides the obvious performance improvements, are that each new generation of IT equipment typically offers IT laborsaving cost advantages. Given the relentless pressure to reduce every element of operational cost, IT organizations will continue to be presented with new, laborsaving IT equipment management opportunities.

- **Managing IT labor costs.** There is an expression among economists that it is difficult to improve the cost/productivity of a four-piece string ensemble. No matter what we do to improve the productivity of a musician, we still need four musicians to perform as a four-piece string ensemble. To a certain degree, so it is with IT operations. Organizations require the ongoing expertise and leadership of IT professionals to establish and maintain their IT infrastructures — the costs of which are subject to unpredictable inflationary pressures. Despite this, when the total cost of a typical piece of IT equipment is evaluated, the purchase price is generally 20–30% of the total cost, with the balance IT labor. However, because the cost of acquiring equipment is more tangible and easier to measure, the other two-thirds of the cost (typically internal labor) is often discounted when analysis is performed.
ESSENTIAL GUIDANCE

Regardless of the size of an organization, the geography where it is conducting operations, or its mission (commercial, governmental, or nonprofit), the IT mission is the same: create, manage, and deliver the requisite IT infrastructure functionality at the lowest cost possible while operating within security, regulatory compliance, and risk management boundaries. To achieve this, many solutions, delivery models, and management frameworks exist; further, what is optimum for an organization today could easily evolve in 24–32 months. Given that situations change and evolve, the most important assumption should be that additional change will occur and the technology management process should anticipate the change.

The most important constraint that IT managers must continually revisit is the reality that, for modern IT platforms, 30% of total cost is the cost of acquiring the equipment (i.e., “capital cost”). The balance, 70%, is for IT labor/services to configure, maintain, upgrade, reconfigure and, ultimately, decommission the equipment. The never-ending quest to optimize delivered value from a pool of IT resources means that IT leaders are always striving to balance and rebalance this “capital/labor” dilemma. If IT leaders overreact to criticism that too much is being spent on new equipment, they risk forcing the IT staff into a “buy once, fix forever” model, wasting skills and resources that could be applied to higher-return initiatives.

The focus of this study is to further illuminate this business and leadership challenge, provide a tangible framework to elevate the macrolevel discussion about whether the capital/labor split is being effectively balanced, and provide a meaningful framework to better manage IT capital. Numbers can be presented many different ways to support different points of view. Ultimately, IDC believes that a tightly managed IT environment, with systematic and consistent life-cycle analysis driving a disciplined equipment renewal process, will ultimately produce better and more consistent IT functionality at lower total cost across multiple generations of IT equipment. Said colloquially: Acquire, deploy, and retire is more efficient than buy, fix, and fiddle forever. On any given day, a sound case might be made to extend the life of a particular machine in a particular situation. Overall, a policy that destructively second-guesses can lead, in the extreme, to one of endless fussing, reevaluation, and inaction. The results are often an organization unable to fulfill its mission as it gazes at its navel and wonders what could be.

As presented in this study, the example of two generations of leased desktop PCs is 20.5% less expensive than buying and holding one machine for six years. This example is presented not as an endorsement of leasing but as a means to demonstrate the variation in outcomes possible by choosing two somewhat extreme endpoints. IDC believes that shorter average life cycles, crisp well-defined IT management practices, and disciplined IT equipment portfolio management produce the best results. This can be achieved by owning or leasing or via a managed services contract. For reasons identified within this study — overcoming organizational barriers to shorter equipment life cycles because of the reluctance to decommission equipment before the end of its original amortization period and shifting an organization from a dollop to a "continuous flow" capital management plan — leasing IT equipment can be a useful practice to facilitate this change.
IDC believes that by not fully integrating operational cost/performance data into the IT capital planning and analysis framework as well as the lease-versus-buy capital analysis models, IT organizations may be incurring unnecessary expense penalties of 20.5% or more to acquire, manage, and decommission select IT equipment platforms. Because of the large volume and ubiquity of desktop PCs, we have focused on this platform as the subject of this study. IDC believes similar cost ratios and analytic pitfalls exist for other major IT platforms.

A well-formed IT life-cycle management policy that presents a repeatable and consistent framework for replacing and renewing the "consumable" IT assets will actually reduce IT operating costs. Despite these findings and observations, IDC estimates that more than 70% of organizations continue to rely on the financial amortization schedule as the de facto useful life for IT equipment. As a counterpoint, imagine a commercial vehicle replacement policy focused not on actual mileage or repair history but on the calendar. In fact, most organizations replace vehicles in their commercial fleets when they reach either 75,000 miles or four years — a life-cycle management strategy that attempts to balance obsolescence and age.

**Effecting Organizational Change**

This study identifies opportunities to improve commonplace analytic methods used in many IT organizations. Implementing the methods presented within this study face two substantial obstacles: ready access to the operational and financial data and cultural resistance to change.

With regards to Russian author Leo Tolstoy, who wrote "Happy families are all alike; every unhappy family is unhappy in its own way," creating and implementing change within a complex organization is difficult and unique.

Despite protestations to the contrary, most organizations have IT infrastructures that capture much of the operational support and equipment failure information necessary to perform meaningful life-cycle analysis — although it is likely not sitting packaged and ready to go. The service desk/help desk usually tracks the performance of equipment in the field, datacenter operational logs capture service incidents, and IT planning/project portfolio management teams have excellent visibility into the infrastructure limitations impacting innovation projects. When asked, most IT operations can readily report which models of laptops or datacenter storage devices or network switches require excessive maintenance and support and are ready candidates for immediate replacement.

The challenge is creating the cultural will to use the information to take a different direction. To this end, IDC recommends four steps to empower IT technology management leaders and sustain change:

- **Communicate the external pressures that create the need for change.** Individuals can be energized to embrace change if they understand why it is needed and how the changes asked of them contribute to success. Globalization requires most organizations to shift to a mindset with fewer personnel and with organizationwide accountability for costs.
Engage change champions. Role models who drive change are a critical component. A repeatedly demonstrated best practice is to identify change leaders and encourage them, shield them, and visibly reward them. This is also an ideal leadership development role. It requires the individuals to learn the skill of building consensus for action without direct lines of command and control — an essential leadership perquisite.

Address employee concerns; take compensation issues off the table. Change creates personal stress and often identifies organizational fault lines. The sooner these are identified and addressed, the sooner the process of change will be possible. An obvious but often overlooked component is how change affects employee compensation metrics: annual goals, bonuses, and other personal measures of success.

Support the change with new tools and systems. "Here's your bicycle, be in Tibet on Tuesday," demonstrates a leader with a clear objective and an ability to communicate concisely. It also demonstrates one who is unable to set reasonable challenges and communicates that the changes are not real because the outcome is not remotely achievable.

Other Resources

Beyond the organic expertise within an organization, expertise, support, and assistance are available from a range of equipment, software, services, and financing companies. IT manufacturers can provide advice and counsel about equipment futures; software companies offer a rapidly growing range of data tools to enable analysis, and services companies can share best practices in minimizing support requirements. While each of these providers can provide valuable information, in many cases, the IT leasing and financing companies, whether they are directly affiliated with a particular manufacturer (e.g., Cisco Capital, HP Financial Services, HDS Credit Corp., IBM Global Financing, Microsoft Financing, or Oracle Financing) or an independent provider (e.g., Bank of America, CIT, or GE Capital), can provide a uniquely focused financial perspective on the challenge.

Achieving success as an IT leasing company requires a company balance on the twin horns of capital management and technology change. For this reason, IDC believes these companies can bring useful and relevant information to the fore. Each of the providers named in the preceding paragraph has leased billions of dollars of IT equipment or software. Because captive finance companies, those owned or operated by IT manufacturers, have special expertise in their own technology, IT organizations considering change initiatives should consult them, as well as other providers, for a full perspective.

In conclusion, the most important aspect of changing an important business process such as IT equipment life-cycle management is to recognize that the goal should be to strive for excellence, not perfection. There will always be innumerable obstacles to perfection; there is also tangible business value to be harvested by moving beyond the current practices employed within many organizations to a more quantitatively rigorous method of investing and managing IT capital.
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Related Research

- Used Equipment Liability: Retired IT Equipment Often Contains Sensitive Data (IDC #lcUS20892507, September 2007)
- U.S. Lease Accounting Standards to Be Reconsidered (IDC #lcUS20266806, July 2006)

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