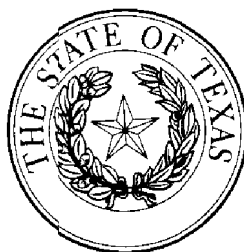


Lease vs. Purchase

Guidelines for Lease vs. Purchase of Information Technologies



Department of Information Resources

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Executive Summary

Purpose

The Department of Information Resources (DIR) conducted a study of the issue of leasing versus purchasing information technologies as directed by the General Appropriations Act of the 75th Legislature. One of the Legislature's requirements was the development of guidelines for making the lease versus purchase decision to be used by state agencies in evaluating cost alternatives. This paper presents the guidelines DIR has developed as a result of the study.

Issue

The rate of technology change is increasing, with an emphasis on client/server technology, faster system development, and shorter life cycles. This has led to spiraling information technology (IT) budgets, driving the need for a re-evaluation of IT management issues. Organizations must find new ways to accommodate technological change. Leasing has recently emerged as a feasible, cost-effective alternative to purchasing equipment, particularly in the desktop and laptop areas. The decision on whether to lease or purchase equipment must be made by:

- Examining the IT management processes at the agency/university
- Determining agency/university business needs regarding IT
- Conducting a cost-benefit analysis of the leasing and purchasing alternatives

If done in the right way for the right reasons, leasing can be an efficient and cost-effective alternative to purchasing. If handled incorrectly, leasing can be more expensive and harder to manage than an outright purchase.

Reasons to Lease

- Help smooth budget spikes
- Facilitate rapid technology deployment
- Facilitate standardization efforts
- Provide an effective disposal strategy for used equipment

Reasons not to Lease

- Lack of an in-house IT asset management program
- Unacceptable risks of signing a multi-year contract committing to one technology or vendor
- Lack of negotiation and contract management skills
- Inability to strictly adhere to contract length, terms, and conditions
- Lack of a strong architectural plan for technology

Financial Considerations

Organizations need to outline the costs associated with their current procurement methods and equipment management. These include:

Acquisition costs

Asset management costs

IT support costs

Disposal costs

Using these figures, organizations can calculate the respective costs of leasing or purchasing equipment.

Bottom Line

Cost savings from a true lease will not be apparent when simply comparing the price of the lease to the price of the equipment. The savings and efficiencies come from improvements in the IT life cycle management process, and are dependent upon the situation at the individual agency or university. In some cases, purchasing will provide greater functionality and efficiency to the users, while in other situations, leasing may allow agencies and universities to leverage their information resources budgets more effectively. Leasing equipment may result in statewide savings, however, particularly in regard to asset disposal, where costs are not always borne by the agency disposing of the equipment.

Introduction

Present Value

The concept of present value is crucial to making an equal comparison of costs between purchase, lease-purchase, and leasing options. Present value refers to the cost of future dollars in today's dollars. A dollar that you have available to use in the future is worth less to you right now than a dollar that you can use immediately. When comparing leasing and purchasing alternatives, the future dollars you would expend in a lease or lease-purchase contract must be converted to their value in present dollars in order to compare the real costs of each option. The present value (PV) of future dollars is determined by the following formula:

$$PV = \frac{C}{(1+r)^t}$$

where C = Total dollar amount

r = Discount rate (usually the interest rate), measured per unit of the time period

t = Time period

A sample cost analysis using present value is included in Appendix A.

Alternatives for IT Acquisition

Agencies and universities acquiring information technology have several options.

Outright purchase is the most common option. Outright purchases can be made with any agency funds—general revenue or other dedicated funds—unless specific restrictions are placed on the funds. Information technology hardware is classified as a capital budget expenditure, but can also be purchased through general revenue lapsed funding. Agencies and universities must submit capital budget requests to the Texas Legislature, justifying the need for any type of long-term physical asset. The Legislature can establish capital budget line items, either capping the amount allocated to capital budget expenditures, or approving or rejecting purchases on an item-by-item basis.

Lease-purchase, or capital leasing, is the second major option. A lease-purchase agreement spreads out the terms of payment for equipment. At the end of the payment period, the purchaser obtains title to the equipment, but has been able to use the equipment and to spread equipment payments over time to ease the financial burden of making large IT acquisitions. Additionally, in the State of Texas, capital budget purchase items that exceed \$10,000 and have a useful life of at least three years are eligible for the Texas Public Finance Authority's Master Lease Purchase Program (MLPP). The low interest rates charged by TPFA can make large capital purchases more affordable.¹

Inventorying Leased Equipment

While the state requires assets of a certain value to be reported in the State Property Accounting system, leased equipment is not considered a state asset, so it does not need to be reported in SPA. It is possible to enter the leased item for tracking purposes; this can help agencies to manage the leasing equipment and contract.

A true lease, also referred to as an operating lease, does not involve the lessee obtaining ownership of the equipment. The vendor retains ownership, and the lessee obtains the use of the technology for a specific amount of time. An operating lease must meet standards set by the Government Accounting Standards Board (GASB).² Requirements include:

The lease term cannot exceed 75% of the useful life of the equipment.

If the organization leasing the technology wishes to purchase it at the end of the lease, the organization must pay fair market price for the equipment.

The present value at the beginning of the lease term cannot equal or exceed 90% of the purchase price.

The lease cannot automatically transfer ownership of the property to the lessee by or at the end of the lease term.

If these requirements are not met, the lease is considered a lease-purchase and the equipment must be capitalized.

A manufacturer or captive lease agreement can be either a type of true lease or a type of lease-purchase. In a captive lease, the vendor offering terms is also the manufacturer of the equipment. Mainframe leasing agreements are standard captive leases, where the equipment represents a significant financial investment, and the vendor offers some payment relief to ensure a closed sale. In these cases, there are usually strict limitations on the ability to use and add non-manufacturer parts or upgrades. Some PC vendors are now also offering captive leases, and those terms may resemble true leases more closely due to the greater flexibility and portability of PCs.

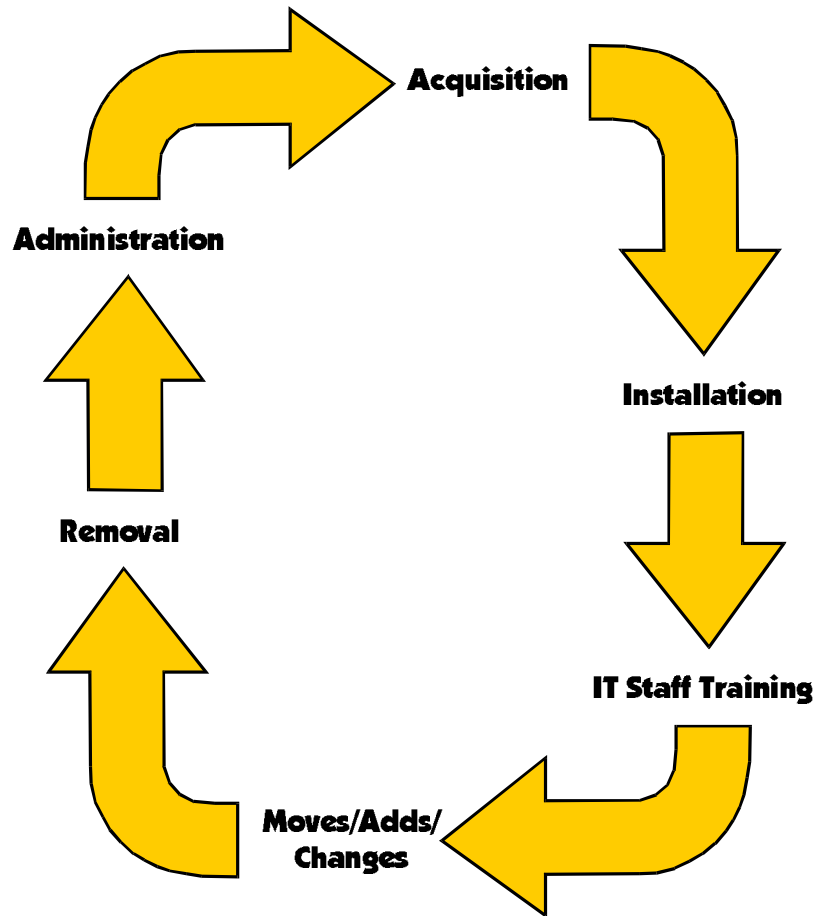
Technology Management Issues

The rate of technology change is increasing, with an emphasis on client/server technology, faster system development, and shorter life cycles. This has led to spiraling information technology (IT) budgets in both the public and private sectors, driving the need for a re-evaluation of IT management issues. Asset management and total cost of ownership (TCO) concerns have become increasingly important due to the need to understand and control the computing environment. IT management begins with the decision to acquire hardware or software, and continues through the useful life and final disposition of the item.

Asset management covers the entire spectrum of IT ownership, from decisions and negotiations regarding purchases, to establishing life cycles, to management of the resource, and arranging for disposal of obsolete equipment. It enables agencies to track what they have, what they use, and what they need. Asset management provides control over the computing environment, allowing managers to leverage IT components and costs for maximum cost-effectiveness and efficiency.

TCO models describe the cost to an organization of establishing and maintaining a computing environment. Their intent is to quantify costs beyond the purchase price of hardware and software. The actual purchase cost of IT is one of the least expensive factors in most TCO models, although acquisition strategies must still be cost-effective.³ With TCO, agencies must also consider the cost of maintaining the system, the availability of staff expertise (for problem solving, development, and management), and the value of the equipment at the end of its useful life cycle.

Technology Life Cycle



The acquisition decision must be made with a complete understanding of overall processes and agency needs. Both TCO and asset management go beyond purchase price to identify life cycle costs and management issues that may lead an agency or university to prefer either leasing or purchasing as an acquisition strategy. These two subjects frame the decision-making process for acquiring information technologies.

At each step of the life cycle, asset management issues and TCO costs can be identified. Itemizing these issues pinpoints areas for agencies and universities to focus on when making acquisition decisions. Asset management practices must be in place at each step to control the computing environment and reduce leasing costs to the agency. TCO costs help to identify the full costs of IT acquisition and management. Understanding the impact of both issues enables an agency to conduct an accurate cost-benefit analysis.

The following table identifies issues to consider at each step of the technology life cycle.

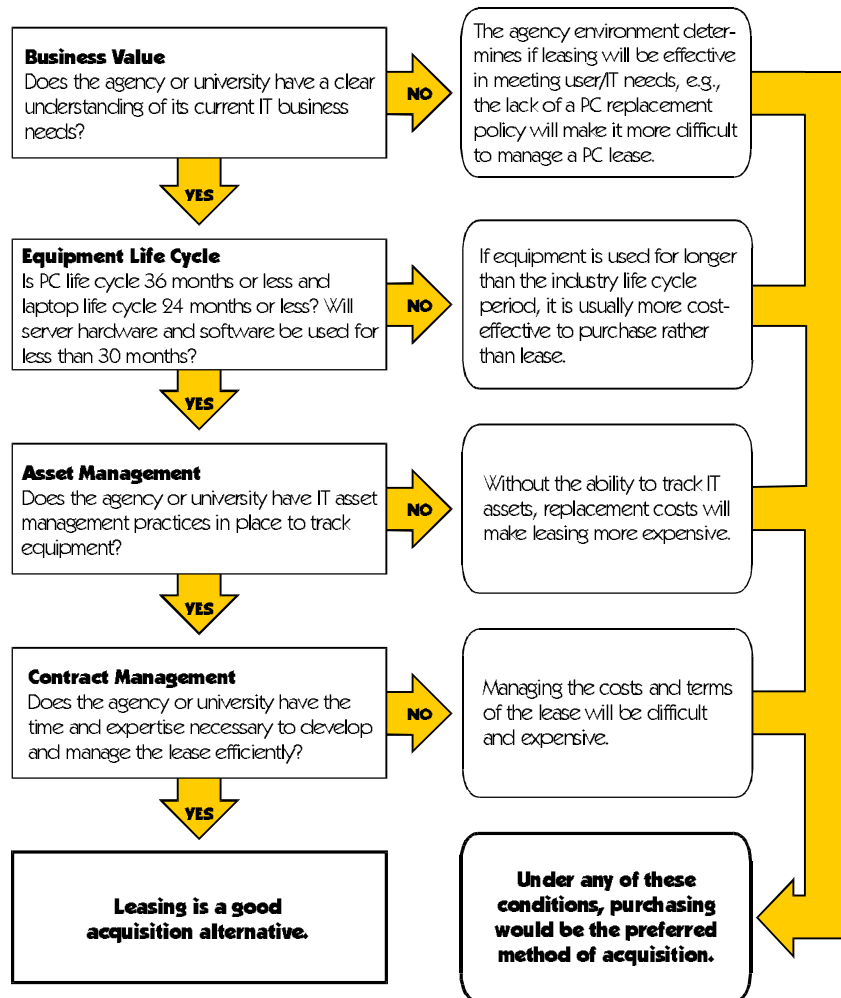
MANAGEMENT ISSUES		
Life Cycle Step	Asset Management Issues	TCO Costs
Acquisition	<ul style="list-style-type: none"> • Standards • Budget constraints • Life cycle 	Staff time for selecting technology, writing and processing the purchase orders, and submitting the order to the vendor. The actual purchase cost of the hardware or software is considered here.
Installation	<ul style="list-style-type: none"> • Inventory 	Costs for receiving and installing the new equipment. Cost and time for disposal of currently owned equipment.
IT Staff Training	N/A	Any IT staff training on new technology represents a cost to the organization. These costs will be similar regardless of whether the technology is leased or purchased. End-user training may result in costs and benefits to overall agency efficiency, but the calculation of these costs is not within the scope of this paper.
IT Staff Costs for Maintenance	<ul style="list-style-type: none"> • Asset tracking • Life cycle tracking 	Staff time spent maintaining and upgrading new hardware or software. It is possible that acquiring more advanced technology initially could be less expensive to an agency than buying cheaper, less advanced technology, if the equipment life cycle is considered. Incremental upgrades and maintenance costs will affect this decision.
Removal	<ul style="list-style-type: none"> • Life cycle • Inventory update • Physical disposal • EPA restrictions • Software licensing • Data removal 	Staff time and resources spent to prepare items for surplus, showing potential takers the surplus available, and arranging for disposal if the surplus equipment is not taken.

Leasing, Purchasing, or Lease-Purchasing

Assessment

The way technology is acquired reflects how an agency or university understands its needs and its current environment. The advantages and disadvantages should be weighed according to the situation, then a cost-benefit analysis should be conducted to assist with the final determination of value. If done properly and in the right situation, leasing can be cost-effective and efficient. If done poorly or without due consideration, leasing will be more expensive and harder to manage than an outright purchase or a lease-purchase acquisition.

Lease vs. Purchase Decision Tree



Supporting Questions

The following questions can be used in assessing the organization's needs and current environment.

Business Value

These questions examine the need for new equipment for end users, and the agency's ability to manage a leasing contract.

1. Does your agency/university have a formal replacement plan? If so, leasing is feasible. If replacement is done on an as-needed basis, the controls may be lacking to manage a lease.
2. Does your agency/university currently lease any type of equipment? If so, this can provide useful expertise at identifying the usefulness, benefits, and drawbacks of leasing in your agency.
3. Does your agency/university have a business need to replace PCs more often than is currently done? If so, what is the largest obstacle to more frequent replacement?

Equipment Life Cycle

Identifying current agency practices helps to determine if leasing would or would not be useful to the agency. Long-term use of equipment indicates that the costs of leasing would most likely outweigh its benefits.

1. What is the average age of PCs before they are replaced in your agency/university?
2. How long are servers used?
3. Is data center software upgraded on a regular basis?

Asset Management

The ability to know where all of the IT equipment is at a given point in time is crucial to lease management. Tracking only at aggregate levels does not allow the agency to meet leasing terms when the time comes to identify and return the leased equipment. Penalties for lost/stolen equipment can add significantly to the cost of a leasing engagement.

1. Does your agency/university have IT tracking mechanisms in place?
2. Does your agency/university have a problem with lost or stolen IT equipment? If so, is this a small, medium, or large problem?

Contract Management

Effective leasing depends on the ability of the agency or university to set up the lease properly at the outset, and then to manage the entire life of the leasing contract. Uncertain funding makes leasing much less feasible.

1. Does your agency/university have the time to select a vendor?
2. Does your agency/university have the time to develop a good leasing contract?
3. Does your agency/university have the time and staff to manage the contract throughout the life cycle of the equipment?
4. What is the stability of the primary source of funding for your IT equipment?

Advantages and Disadvantages

The decision over whether to lease, purchase, or lease-purchase technology must be made according to the agency's understanding of how the equipment will be

used. Advantages and disadvantages of each option should be weighed to determine what factors are the most important to the agency or university.

For example, an agency may need to arrange for a large number of distributed users to communicate. In this case, leasing may be beneficial as it would allow the agency to obtain the same equipment for all users, and get all the equipment installed quickly and easily. In another case, if an agency seeks to acquire new computers for a select number of employees in one location who use mostly word processing and spreadsheet applications, purchasing may be a better option. This is because the equipment could easily be used for longer than three years, and other users may be able to use the old equipment. The use of the equipment and the needs of the agency drive the acquisition decision. If a lease-purchase decision is based solely on financial measures, all other issues regarding business functions and needs are ignored.

Purchasing

Purchasing may be the preferred option if:

PC equipment is to be used for longer than three years

Note: If the useful life of PCs or laptops is calculated as five years or more, leasing is highly discouraged.

The agency or university does not have staff and systems to track assets and manage the lease

A technology architecture is not in place

Funding is uncertain so that the full term of the lease can not be met

Advantages	Disadvantages
<ul style="list-style-type: none"> • Wide familiarity and acceptance with purchasing requirements, skills, and techniques. • Responsibilities and management systems for purchased equipment already exist in state organizations. • Purchasing avoids the complexities involved with managing leasing agreements. • Ability to keep equipment for as long as it is needed and to modify it as needed. 	<ul style="list-style-type: none"> • May hinder your agency’s ability to take advantage of technological advances when the technology becomes available. • Ties your agency to expensive upgrades of equipment that may become obsolete quickly and thus will be unable to meet agency needs. • Using different levels of equipment and software may require more IT staff time to be spent on repairs than on projects, requires greater knowledge sets among IT employees, and may decrease the ability of employees to exchange information. • Equipment disposal can be time-consuming and costly. • Up-front costs may have adverse impact on agency budgets. • Capital-intensive expenditures for IT with decreasing life cycles.

Leasing (True Lease)

Leasing may be the preferred option if:

Technology replacement according to industry life cycles is needed

There is a business need for rapid technological change

Agencies or universities are undergoing downsizing or reorganizing

There is a business need for quick adoption of new technologies

The flexibility of spreading out payments and using operating funds (rather than capital funds) would be beneficial

The Difference between Outsourcing and Leasing

In outsourcing activities, the user contracts with a vendor to provide, manage, and/or maintain certain services. Leases leave management and maintenance up to the user, and the vendor retains ownership of the equipment. Staff numbers, workload, and activities remain constant—work is not transferred outside of the organization as it is in an outsourcing agreement.

Advantages	Disadvantages
<ul style="list-style-type: none"> • Systematic technology replacement. Agencies and universities can establish equipment life cycles and stick to them. New equipment can be obtained, then returned to the vendor when the lease contract ends. Staff time spent maintaining different systems and machines can be reduced. • Leveled IT expenditures, reducing spikes in capital budgets. Leasing is considered an operating expense and spreads costs over time, rather than requiring repeated, large expenditures in particular fiscal years for hardware and software upgrades. • Standardization. Good leasing contracts can help organizations standardize on particular platforms quickly and consistently, resulting in savings in staff labor and maintenance, and improving agency operating efficiency, even if there are no spectacular savings in acquisition costs. Total maintenance costs can be lowered due to the standardization and to the use of new equipment. • Easier equipment disposal. With leased equipment, the vendor, as the asset owner, assumes disposal responsibility. • Shift in view of technology. Leasing can encourage viewing IT equipment as business tools, rather than as state assets with expected longevity or as a personal preference for the employee. 	<ul style="list-style-type: none"> • Administrative burden to track equipment and deal with vendors. All leased equipment remains the property of the vendor, so agencies and universities must remain aware of where each piece is and what the return requirements are. Inefficiencies in asset management will prove costly in a leasing environment. • Risk of signing a multi-year contract committing to one technology or one vendor. This could limit agencies' abilities to deploy and use IT effectively. Locking into a specific vendor could make it difficult for the agency to respond to unforeseen needs due to legislative mandates, federal requirements, or business changes. • Changes and modifications to leased equipment should be minimized. These will place additional burdens on contract management and add to the cost of the lease. • It is usually critical to adhere to the industry life cycle in order to obtain the most cost-effective lease possible.

Lease-Purchasing

Lease-purchasing may be the preferred option if:

The dollar value of the equipment is substantial and its useful life is longer than three years

The flexibility of spreading out payments would be beneficial

Advantages	Disadvantages
<ul style="list-style-type: none"> • <i>The same as Purchasing.</i> • Ability to spread payment over time. • Flexibility to choose equipment and leverage dollars. 	<ul style="list-style-type: none"> • <i>The same as Purchasing.</i>

Cost-Benefit Analysis

While business needs drive the acquisition decision, the cost of the options must be considered as well. If a business need is identified for leased equipment but the cost of the lease would be significantly higher than doing a lease-purchase, then the criticality of the need must be re-examined.

A cost-benefit analysis can take several forms, but you should consider all of the elements involved in the life cycle of the equipment, including asset management and TCO issues. The cost-benefit analysis will help to identify and quantify your options. You should:

Perform a cost-benefit analysis between the alternatives of purchasing, lease-purchasing, and leasing

Perform a further cost-benefit analysis between the vendors within each alternative

Leasing Finance Options

The Texas Department of Transportation's Capital Budget Rider in the General Appropriations Act of the 75th Legislature contains this statement:

Capital budget funds appropriated under the Acquisition of Information Resources Technologies may be used to lease information resources hardware and/or software versus the purchase of information resources hardware and/or software, if determined by agency management to be in the best interest of the State of Texas.

COSTS AND BENEFITS TO BE QUANTIFIED		
Purchasing	Lease-Purchasing	Leasing
Equipment price	Payments on equipment	Lease payments
Residual value of equipment	Residual value of equipment	N/A
Maintenance Costs	Maintenance Costs	Maintenance Costs
N/A	N/A	Contracted Maintenance Costs
IT Staff Costs*	IT Staff Costs*	IT Staff Costs*
Agency Staff Costs**	Agency Staff Costs**	Agency Staff Costs**
Disposal Costs	Disposal Costs	Disposal Costs

* IT staff time includes time spent on installation, maintenance, moves/adds/ changes, de-installation, and disposal. Costs will vary depending on who is responsible for maintenance in leasing contracts and on estimates of problem-solving efforts for older installed platforms.

** Agency staff time includes non-IT staff time spent on processing purchase orders, tracking leased equipment, dealing with surplus equipment, etc.

Note: In the analysis, it is important to use Present Value calculations to equalize price comparisons. Use the present value example in Appendix A as a guide. Make sure that the time frames considered for all three options are the same.

It is possible that leasing and purchasing will both be effective options for an organization. Agencies and universities may segment their users, and lease equipment for some positions or divisions, and purchase equipment with a longer life cycle for other users. Experts agree that sections of the IT portfolio with higher use by power users and more rapid obsolescence are better candidates for leasing than equipment with a longer life cycle and less intensive use.⁴

**Decision-Making
Bottom Line**

The decision over whether to lease or purchase ultimately rests with the individual agency or university and is dependent upon internal information resources management. In some cases, purchasing will provide greater functionality and efficiency to the users, while in other situations, leasing may allow agencies and universities to leverage their IR budgets more effectively. Leasing equipment may result in statewide savings, however, particularly in regard to asset disposal, where costs are not always borne by the agency disposing of the equipment.

Cost savings from a true lease will not be apparent from simply comparing the price of the lease to the price of the equipment. The savings and efficiencies come from improvements in the IT life cycle management process, and are dependent upon the situation at each agency or university.

Leasing Strategies

After the cost-benefit analysis is completed, the costs and benefits of each option should be compared to see which option is preferable. This section contains additional guidance on leasing strategies for vendor selection, contract negotiation, and contract management, that will make the contract more successful.

Choosing a Vendor

Selecting possible vendors is a crucial step. The two types of information you need about vendors are general company information about who they are and how they do business, and specific information about the vendors' ability to meet the needs of the agency. Leasing companies can range from equipment producers to third-party lessors. The relationship with the vendor will be made much easier if the two parties understand one another, and feel as if there is some level of trust or commitment to the project. Appendix B contains a sample vendor selection checklist.

There are three separate aspects to examine in vendor selection: the financing options, the equipment offered, and the services available. A leasing package with built-in technology refresh options may cost more than a straightforward lease, but also ensures that the agency will have access to the newest technologies. By negotiating a lease contract that includes services, an agency can avoid contracting with a separate vendor for maintenance, thus avoiding the cost of managing multiple vendor contracts. If internal staff was previously responsible for maintenance, staff maintenance costs can be saved, and personnel can be freed for more complex, strategic IT work. Before entering a leasing agreement or negotiation, know the type of vendor you are looking for, based on your needs and strategies.

Understanding the organization's needs and knowing some specifications for a vendor who works well with the organization will make it easier to develop a Request for Information (RFI) or Request for Proposal (RFP) about services. An RFI can be less explicit than an RFP, but should still contain sufficient information so that responses address requirements accurately. (Note: Although the catalogue purchasing procedure law does not require the use of RFIs or RFPs, it does not prohibit their use, either.) The RFP should include all expectations and relevant information about the needs of your agency. This is the best and often the only opportunity for vendors to demonstrate their understanding of your needs and their ability to meet them in a cost-effective manner. Define your requirements and expectations. You may need to establish weights for the criteria in order to identify the most critical needs, but you should list all requirements so that you can make an effective comparison between proposals.

Negotiating a Lease Contract

The contract negotiation process hammers out the specific details of the leasing arrangement. It provides an opportunity to ensure that you select the best vendor to work with the organization's staff. Vendor behavior during the negotiation

process can indicate the vendor's business culture, so evaluate how completely vendors responded to the initial inquiry, and their willingness to answer questions and negotiate fairly. The vendor relationship is always important, but it is even more crucial when service levels are included in the contract, as a good working relationship must be maintained. Appendix C contains a sample negotiation checklist.

Negotiation Considerations

The negotiating team should include staff from the IT, end-user, legal, finance, and purchasing groups. All of these areas will be impacted by the acquisition method, and can bring their unique expertise and viewpoints to the table. To provide a consistent point of access, selected members of the team can be responsible for direct negotiations with the vendor, but all of the viewpoints need to be represented in the process of proposal reviews.

Elements to consider in negotiating a lease include:

All communications in the negotiation process should go through the agency's negotiating team. Try to ensure that the agency presents a unified front to bidders, so that a contact in one area or group does not provide bidders with information that may differ from what has been presented in the proposal.

Although it is helpful to negotiate with more than one vendor, recognize that signing with two or more vendor companies adds additional staff costs to the leasing contract. Even if equipment prices are lower, more labor will be required to oversee the management of the contract. This is due to the added layers of communication and coordination between the vendors, as well as between the lessee and the vendors.

All terms and conditions must be scrutinized carefully, including technical and functional specifications, as many lessors hope to make additional money in these areas.

The length of the lease should correspond with the necessary life cycle of the equipment and with the industry standard for life cycles. If the life cycle is longer in the agency than standard industry rules of thumb, then the cost of leasing needs to be carefully compared to purchasing or lease-purchasing options. Current industry life cycle standards are 36 months for PCs and 24 months for laptops. It is not necessary to accept the industry life cycle as a guide for establishing your own life cycle, as agency business needs may differ.

Keep in mind that the lowest cost alternative may not be the most cost-effective option. IT leasing contracts tend to change during the course of the contract. The emergence of new technology or a system change may force different options to be evaluated.

Examine the effects of alternative scenarios on the contract. Calculate the cost for different lease contract lengths, and look at the cost impact of either buying or continuing to lease the technology at the end of the lease. Cover issues such as early termination or contract extension with all the vendors in the negotiating sessions.

Decide what types of flexibility the organization needs within the contract—equipment changes, early contract termination, options for increasing/decreasing service levels—and then negotiate for the most important items.

Vendor Acceptance of Current Equipment

In a true lease environment, the vendor may offer to take or purchase existing equipment as part of the lease contract. Agency counsel must be consulted as to whether this is in fact a legal alternative for state agencies and universities, as there are legal requirements for asset disposal and equipment trade-ins. This practice does not meet trade-in standards since the agency or university does not get an asset in return for another asset, as they never take actual ownership of the leased equipment. The General Services Commission is currently considering the implications of this practice.

Managing a Lease Contract

In order to maintain the benefits of leasing, adequate controls must be in place and maintained during the course of the contract. Insufficient oversight of the contract will result in costly charges, weakening its effectiveness.

Elements to consider in lease contract management include:

Assign regular staff to manage the lease contract through the term of the lease. This will enhance the ability of the organization to manage the contract effectively.

Track the life cycle of the equipment along with the financial plan for making the lease payments. This allows staff to ensure the terms of the lease are being enforced, and enables them to track the utility of the lease contract and the ability of the vendor to meet business needs. Asset management software provided by the vendor can assist in this effort, but the agency is responsible for the actual use of the software and for establishing its own monitoring requirements.

Develop a method to quickly identify equipment, purchases, and problems. Early identification of potential problems reduces the risk of increased vendor charges. Keeping track of the equipment will reduce expensive problems with returning equipment at the end of the lease.

Be able to measure the performance and capabilities of the leased equipment and to identify cost savings, improved efficiency, and other results due to the leasing strategy. This will help to justify the continuation of the program and will strengthen the agency's ability to manage its IT. Establish metrics up front and include the ability to make baseline comparisons. Examples of metrics are: reduced help desk staffing and labor costs, end-user productivity increases due to the acquisition of more suitable equipment, and the presentation of overall cost savings when compared to the previous IT budget. Identifying metrics early helps to establish the business case for leasing and requires input from divisions other than just IT.

Be able to project end-of-lease alternatives: the lease can be terminated early, the equipment can be returned, the equipment can be purchased, or the lease can be extended. Each of these scenarios has a different effect on the cost of the lease. Penalties for early termination, lease extensions, or equipment purchases can negate the business and economic value of the lease.

Pay specific attention to the lessor's determination of the equipment's residual value. This estimate will factor in the decision over whether to purchase or return the equipment. Higher residual values mean that it is more cost-effective for the organization to return the equipment, as the vendor seeks to make additional profit in the resale market. Lower residual values can add value to keeping the equipment past the end of the contract, obtaining additional use for a minimal price.

Consider whether the purchase costs outweigh the savings obtained from leasing the equipment originally. If leasing is a preferred option because of the need to maintain leading-edge equipment, equipment purchase requirements can detract from leasing benefits. Leasing contract management is necessary to help avoid refinancing or renegotiating during the course of the contract. Either of the above alternatives can result in additional costs to the organization, and should be avoided if possible.

If a lease is to be extended by more than six months, it is often better to purchase the equipment outright rather than extend the lease.⁵ This is because

the cost of continuing the lease then becomes more expensive than purchasing the equipment at its current residual value.

Make sure the lease does not automatically renew, and that the leasing company does not expect certain notification requirements about ending the leasing contract. End-of-lease notification can have a significant financial impact on an organization. If any of these clauses are in the contract, make sure to meet them as required or there will be financial penalties that lessen the value of the leasing program.

Prepare for end-of-lease by having procedures in place to manage the transition of equipment, whether it is new equipment from the same vendor, or if another vendor or acquisition method is chosen. Procedures for saving/moving data and for dealing with sensitive information should be in place.

Appendix A: Cost Analysis using Present Value

Scenario

Department X has determined that it requires a new computer. The Department uses a 36-month life cycle for PCs, so the equipment will need to be replaced at that time. The acquisition alternatives are:

Purchase

Lease-purchase

Leasing

Department X has obtained the following information regarding each of its alternatives:

Purchase	Lease-Purchase	Lease	Item	Cost
✓			Cost of computer	\$5000.00
✓	✓		Expected residual value of purchased computer	\$725.00
✓	✓	✓	Discount rate	5%
	✓		Quarterly lease-purchase payment	\$455.00
		✓	Quarterly lease payment	\$430.00
✓	✓		Cost of selling/disposing of computer	\$150.00
		✓	Cost of returning computer to lessor	\$50.00

Lease Company Y is prepared to lease the equipment to Department X for three years with quarterly payments. At the end of the lease, Department X would be required to return the computer to Lease Company Y. Additionally, Department X will be required to maintain the computer during the term of the lease. At the end of the lease, Department X will be required to pay for the return of the leased equipment and to remove all software from the PC. It is expected that these costs will be \$50.

If Department X purchased the computer, it would expect to be able to sell the computer for \$725 (the residual value) at the end of the three-year term. The Department expects that it will cost \$150 to make the computer available for sale (including software removal, storage, and transportation costs). Disposal costs are higher in this case, including both staff time spent showing the equipment to prospective buyers and in continuing to manage the asset.

Cost Analysis

To evaluate the alternatives, Department X must conduct a Present Value (PV) analysis to determine which of the above alternatives represents the lowest cost alternative. For the purposes of the PV analysis, it is assumed that the appropriate discount rate is 5%. As explained in the Introduction, PV analysis uses the following formula:

$$PV = \frac{(C)}{(1+r)^t}$$

where C = Total dollar amount
 r = Discount rate (usually the interest rate), measured per unit of the time period
 t = Time period

<p>PURCHASE</p> <p>Calculations</p> <ol style="list-style-type: none"> Find all items to include in the total purchase cost.* For this example, the total purchase cost = [Price (Residual Value Cost to Sell)] Convert all future dollars to present dollars using the PV formula. Future dollars: (Residual Value Cost to Sell) Price is already in present dollars since these funds are expended now, rather than in the future. PV calculation for (Residual Value Cost to Sell): $\frac{725 - 150}{(1+.05)^3}$ Find the total dollar amount of the purchase option. Total Dollar Amount = Price (Residual Value Cost to Sell) $= \\$5,000.00 - \frac{(725 - 150)}{(1+.05)^3}$ $= \\$4,504.31$ 	<p>\$4504.31</p>
<p>LEASE-PURCHASE</p> <p>Calculations</p> <ol style="list-style-type: none"> Find all items to include in the total lease-purchase cost.* Total Dollar Amount=[Cost for year 1+Cost for year 2+Cost for year 3 (Residual Value Cost to Sell)] The total lease-purchase cost can be calculated according to years, months, etc., minus whatever time lengths the contract calls for. This is a three-year lease-purchase, so the calculations go out to year 3. Convert all future dollars to present dollars using the PV formula. Future dollars: Cost for year 1, Cost for year 2, Cost for year 3, Residual Value Cost to Sell Cost for year 1 is in future dollars since the funds would not be expended now. PV calculation for lease-purchase payment cost per year: $\frac{(Quarterly\ Payment)4}{(1+.05)^{year}}$ PV calculation for (Residual Value Cost to Sell): $\frac{725 - 150}{(1+.05)^3}$ Find the total dollar amount of the lease-purchase option. The costs have been described in PV terms. Total Dollar Amount =[Cost for year 1+Cost for year 2+Cost for year 3 (Residual Value Cost to Sell)] $= \frac{4(455)}{(1+.05)^1} + \frac{4(455)}{(1+.05)^2} + \frac{4(455)}{(1+.05)^3} - \frac{725 - 150}{(1+.05)^3}$ $= \\$4,461.16$ 	<p>\$4461.16</p>
<p>* The total purchase and lease-purchase costs can be modified if maintenance costs are considered (see Factors Affecting Results, #2).</p>	

<p>LEASE</p> <p>Calculations</p> <p>1. Find all items to include in the total lease cost.* Total Dollar Amount = [Cost for year 1+Cost for year 2+Cost for year 3+Cost to Return] The total lease cost can be calculated according to months, years, etc., minus whatever time lengths the contract calls for. This is a three-year lease, so the calculations go out to year 3.</p> <p>2. Convert all future dollars to present dollars using the PV formula. Future dollars: Cost for year 1, Cost for year 2, Cost for year 3, Cost to Return Cost for year 1 is in future dollars since the funds would not be expended now. PV calculation for lease payment cost for one year: $\frac{(Quarterly\ Payment)4}{(1+.05)^{year}}$</p> <p>PV calculation for Cost to Return: $\frac{50}{(1+.05)^3}$</p> <p>3. Find the total dollar amount of the lease option. The costs have been described in PV terms. Total Dollar Amount = [Cost for year 1+Cost for year 2+Cost for year 3+(Cost to Return)] $= \frac{4(430)}{(1+.05)^1} + \frac{4(430)}{(1+.05)^2} + \frac{4(430)}{(1+.05)^3} + \frac{50}{(1+.05)^3}$ $= \\$4,727.60$</p>	<p>\$4727.60</p>
<p>* The total lease cost can be modified if maintenance costs are considered (see Factors Affecting Results, #2).</p>	

Factors Affecting Results

In this example, leasing is the most costly alternative for Department X. Two factors affect this calculation:

1. The expected residual value is a critical input in this analysis, as it represents the amount Department X expects to receive for selling the computer at the end of the three-year term. If the expected residual value is not received or is lower than expected, costs for purchasing and lease-purchasing would increase. Leasing is the only alternative where the Department takes no risk on the residual value of the computer.
2. To simplify the example, staff labor costs for maintenance were not included in the calculation. If staff savings through reduced maintenance were expected from leasing, for example, these savings could be quantified and included in the calculation. This would change the relationship of the costs of each option. Note that if maintenance is included in the leasing contract, the purchase and lease-purchase calculations must also consider maintenance costs in order to have an equal comparison of alternatives.

The example in Appendix A is adapted from the *Leasing Information Technology QuickGuide* published by the Communication and Information Technology Branch of the Queensland Government, Queensland, Australia.

Available at <http://www.qgts.qld.gov.au/lease-frame.html>.

Additional assistance provided by Professor Shama Gamkhar, LBJ School of Public Affairs, the University of Texas at Austin.

Appendix B: Sample Vendor Selection Checklist

YES	NO	CHECKLIST
		Complete a thorough vendor background check.
		Are they financially stable? (check credit reports and bank references)
		Do they have a good leasing track record?
		Verify vendor qualification.
		Do they have the quality and quantity of staff needed to carry out the contract?
		Do they have the ability to carry out the administration requirements specifically related to your agency needs (i.e., billing)?
		Do they have the ability to manage their own risks?
		Do they have experience with providing the equipment you need?
		Do they have experience handling the type or size of contract you need?
		If contracting for multiple locations, particularly over a wide geographic area, does vendor have the ability to meet needs at <i>all</i> locations?
		Do they describe how they handle equipment disposal at the end of the lease?
		Is the end-of-lease purchase price determined?
		Does the vendor allow substitution of like items for lost or damaged equipment?
		Does the vendor provide end-of-lease notification?
		Does the vendor provide notification of lease transference?
		Have life cycle scenario costs been considered for early termination?
		Have life cycle scenario costs been considered for return to lessor?
		Have life cycle scenario costs been considered for extension of lease?
		Have life cycle scenario costs been considered for a purchase option at end of lease?
		Has the vendor specified the estimated residual value? (A higher residual value can mean lower lease payments since the vendor can make money on the asset resale.)
		Have standards of equipment usage been verified for moves, changes, reassignments, and upgrades without vendor permission?
		Does the lessor define the appropriate environment for the equipment—i.e., voltage, operational environmental requirements?
		Have service level agreements been verified for installation—full, partial, minimum?
		Have service level agreements been verified for maintenance requirements, including acceptable downtime (if any)?
		Have service level agreements been verified for asset management requirements—i.e., what type of software is included, will the vendor provide tracking reports?
		Have service level agreements been verified for upgrade flexibility options?

Appendix C: Sample Lease Contract Negotiation Checklist

Note: This checklist is provided for information purposes and is not intended as legal advice. You are strongly urged to consult your agency's legal counsel in connection with any lease contract negotiation issues.

Design a lease contract to fit your agency's needs; do not simply use a vendor's master lease. At a minimum, your contract should include the following:

YES	NO	CONTRACT DETAILS
		Does the contract provide details about the type of lease?
		Does it provide details about the lease expiration date?
		Does it provide details about the payment procedures: amount, method, type of payment (including security deposits, down payments)?
		Does it provide details about the deadlines for cancellation, renewal, and contract change notices?
		Does it provide details about the time frame? Match the start of the lease to the agency's time frame. Do not accept an interim lease payment if a lessor starts leases at certain times.
		Is the price of contract modification included for early termination?
		Is the price of contract modification included for return to lessor?
		Is the price of contract modification included for extension of lease?
		Is the price of contract modification included for purchase option at end of lease?
		Is the price of contract modification included for upgrades?
		Is there a provision allowing each piece of the lease to be treated as a separate item? This allows the lessee to replace/purchase/renew individual pieces rather than dealing with the IT assets collectively.
		Is there a provision allowing substitution of like items for lost or damaged equipment at end of lease?
YES	NO	EQUIPMENT INFORMATION
		Is there a complete description of property to be leased?
		Are delivery times and dates specified?
		Are warranty period and conditions, including Year 2000 warranties, defined?
		Is acceptance criteria defined?
		Are insurance and business continuity requirements defined?
		Has the provision of loaner equipment in case of damage/repair been addressed?
YES	NO	END OF LEASE

		Is estimated residual value specified? If the lease needs to be renewed for a short term, it should be renegotiated to reflect the actual (lower) value of the equipment.
		Are end-of-lease notification requirements clearly defined for notification by vendor prior to end-of-lease?
		Are end-of-lease notification requirements clearly defined for ensuring end of lease does not automatically renew?
		Are end-of-lease notification requirements clearly defined for ensuring vendor does not expect certain notification requirements? (If so, make sure to pay attention to this issue when managing the contract.)
		Are packaging and shipping terms defined? (Note: Do not sign a contract that requires equipment to be returned in original packing)
YES	NO	MAINTENANCE AND SUPPORT
		Are maintenance and upgrade minimum standards to be met by the agency defined?
		Are roles and responsibilities for support agreements outlined for maintenance—amount and type (i.e., by telephone or on-site)?
		Are roles and responsibilities for support agreements outlined for downtime? Determine acceptable level, response time.
		Are roles and responsibilities for support agreements outlined for vendor management assistance (software, reports)?
		Are roles and responsibilities for support agreements outlined for installation—full, partial, minimum?
		Are roles and responsibilities for support agreements outlined for training—amount and type?
YES	NO	GENERAL
		Are lessee rights clearly outlined? Is it clear how the agency will enforce the contract?
		Have the legal and financial departments reviewed the contract?
		Has all legislation regarding the acquisition of IT been met?

Appendix D: Leasing Specific Types of Equipment

Mainframe/ Minicomputer Hardware Leasing

Data center equipment such as a mainframe or minicomputer is often among the first items considered for leasing. Mainframes have been available on a captive lease basis since the 1960s. These larger computers are candidates for leasing or lease-purchasing because of the initial investment required, and because of the need to make upgrades to the equipment. Mainframe leasing options are usually subject to captive leasing agreements. Captive leasing agreements are set up differently from other leases, as the initial price bids are lower since vendors make money on the upgrade clauses.

Technology changes in the past decade have led to a shift in the way these items should be viewed as lease possibilities. Advances in Direct Access Storage Devices (DASD) resulted in lower purchase costs, especially for large-scale data centers, making leasing less attractive to data center administrators. Complementary Metal Oxide Semiconductor (CMOS) technology improvements are providing greater operating efficiencies for data centers, due to decreased electrical and cooling costs, so older technology has lost some of its resale value, as it is now more attractive to acquire new equipment.⁶ The effect of these changes has decreased vendors' ability to resell the equipment, as people want to purchase new equipment rather than shop the used market. The residual value of the equipment has decreased, lowering vendors' profit margins on the resale of used equipment. More money must now be made on the leasing terms and the upgrade clauses common in captive leasing agreements. Another strategy is to provide a bundled lease/management package, where the vendor leases equipment and manages data center operations. For either leasing option, examine the terms and conditions of captive or other data center leases. If you are contracting for management services, determine the costs and benefits to the organization of adding this provision to the contract.

Other special considerations must be made for midrange systems and servers. Their life cycles are usually shorter, due to the speed of technological development. IBM Credit Corporation estimates that 25% of AS/400 users are leasing their equipment, due to reduced capital costs, and technology refresh and management issues.⁷ If you lease servers, allow for greater flexibility for capacity and access increases.

When leasing data center equipment, be aware that the standard leases for many mainframe products are based on monthly pricing. A general rule is that the expense of leasing for thirty months usually equals the cost of purchasing the product, so if the rule holds true for the specific purchase, it is more cost-effective to purchase data center equipment that will be used for more than thirty months.⁸

Telecommunications Equipment Leasing

Telecommunications systems equipment involves various technologies, equipment types, and user applications, and may be installed in a multitude of locations. Most of the same considerations in leasing computer equipment apply to telecommunications systems. Areas of consideration in determining whether to lease telecommunications equipment include the changing technology environment in data communications, the type of equipment being considered for implementation, and the usual widespread distribution of telecommunications equipment in support of field locations.

Advancements in equipment performance, operating system features, and applications of technology, such as frame relay, ISDN, ATM, etc., seem to make equipment installed the previous year obsolete. Additionally, network managers are constantly being asked to provide greater bandwidth to the networks in order to meet performance requirements.

The lease of data communications equipment, such as routers, switches, DSU/CSUs, and other network support products may assist departments in upgrading networks on a regular planned basis, preventing them from obsolescence. Units can be upgraded from 56 Kbps bandwidth to T1 to provide greater bandwidth, or switched to ISDN technology to reduce costs. Additionally, integration of technologies, business realignments, or consolidations with other networks may require standardization with compatible products as part of a centralized network management plan.

Further considerations in determining whether to lease network equipment include implementation costs and remote installation considerations. Lease agreements can include maintenance and replacement of broken equipment. This is a consideration when supporting large wide area networks. The lease vendor is responsible for the performance of the leased equipment and will need to replace the equipment at the remote locations. This aids the network management staff by requiring the vendor to travel and install replacement parts or require overnight shipments for inoperable equipment. Additionally, lease agreements can include the installation and the implementation of the equipment before billing starts. During large network changeovers, such as when converting to a router/IP environment, the costs for the installation can be rolled into the lease costs reducing the initial outlay not only for the equipment, but also for the implementation.

Finally, expensive items can be leased to defer or eliminate the one-time costs that can delay projects. In converting from an antiquated PBX telephone system, financing costs for large systems, user stations, and new cabling and installation can be accomplished by lease arrangements. Again, the installation costs can be deferred by including the costs in the monthly leased arrangements. There are additional long-term costs to consider because you have to pay interest on the lease.

PC/Workstation Hardware

Desktop leasing is a relatively new form of leasing in the technology field, but it has quickly gained popularity in the business world and the federal government.⁹ PC leasing is attractive because it eliminates the need to upgrade and manage functionally obsolete PCs as part of the organization's computing environment. Buying the largest number of desktops needed will lower the purchase price, and eliminate the cost of upgrading in small, additional batches as needed.

The vendor relationship becomes especially important here, due to the number of items being leased and the need to keep track of them all. Warning stories abound regarding vendors who have taken advantage of leasing contract points. For example, leasing agreements can aggregate all assets together, so if one item is damaged or cannot be found, the lessor must pay the residual value for all the items. Another example is the need to return all items leased in the original packing materials.¹⁰ While these examples are often cited as reasons not to lease, good vendor selection and contract negotiation processes can help to eliminate these items as sources of conflict.

PCs are often moved, so inventory tracking is essential and the right to move PCs must be included in the contract. Peripherals are not often considered in the leasing process. Printers and/or software can be included in bundled vendor offerings, so it is important to break down the specific costs involved with each section of the bundled offering. If software or peripherals are offered as part of a bundled service package, determine what part of the cost of the leasing package applies to those items. Decide if that cost provides benefit to the organization, or if it should be eliminated and used as a negotiation tool to win concessions that are more valuable.

PC leasing is especially service-oriented, because end users are heavily involved and because the equipment is distributed across the enterprise. Asset management software, usage reports, and other management tools that may be offered by vendors can help organizations with making strategic decisions regarding future computing directions.

Laptops were traditionally considered poor candidates for leasing because of equipment movement and wear and tear on machines. This opinion is changing, however, as laptop use becomes more common among end users. Leasing companies now offer laptop leasing in order to meet the business need for equipment with a relatively short life cycle. Leasing can also avoid expensive upgrades or repairs that add to the cost of the machines and limit the agency's ability to reuse them. Although laptop leasing is attracting more interest from both vendors and users, special care must be paid to terms and conditions in laptop leasing contracts. Laptops should be leased in a separate, dedicated contract and the lessee must pay attention to imposed costs for lost, stolen, or broken equipment. Examine these costs based upon the agency's experience with these issues in order to determine the cost-effectiveness of a particular vendor's offering.

Appendix E: Additional Resources and References

Technology Information Center

The Technology Information Center (TIC) at the Department of Information Resources offers information resources and research expertise to Texas state agency and university personnel who are seeking to make informed decisions about information technology. TIC staff research all topics relating to computer and telecommunications technologies, including vendor and product selection, IT management, IT careers and staffing, contract negotiation, and much more. Resources include books, journals, government publications and reports, CD-ROMs, and online access to research advisory services.

Contact the TIC for assistance Monday through Friday from 8 A.M. to 5 P.M.
Telephone: (512) 475-4728 or (512) 475-4790
Fax: (512) 475-4759
E-mail: tic@dir.state.tx.us
Web Site: <http://www.dir.state.tx.us/TIC/>

Research and Advisory Services

Gartner Group, established in 1979 by Gideon Gartner, provides multiple services based on specific information technologies. Standard deliverables include research notes; strategic analysis reports; analyst consultations; audioconferences; executive briefings; a late-breaking technology news service delivered by fax or e-mail called GartnerFlash; the Monthly Research Review, which summarizes research published monthly; and Inside Gartner Group, the weekly newsletter that highlights weekly discussions held by Gartner analysts. Access to published research is available through Gartner's Web site, <http://www.gartner.com>.

Gartner Group's Personal Computer service provided assistance in developing these guidelines. According to Gartner, the Personal Computing (PC) service helps organizations decide *what to buy on the desktop, who to buy it from, and how to manage it once they've bought it*. The PC service helps users resolve issues pertaining to a large population of desktop PCs, including strategies for managing hardware and software assets and end-user support.

META Group, established in 1989 by Dale Kutnick and Marc Butlein, offers seven core information technology services: Advanced Information Management Strategies, Application Delivery Strategies, Enterprise Data Center Strategies, Global Networking Strategies, Open Computing & Server Strategies, Services & Systems Management Strategies, and Workgroup Computing Strategies. Standard deliverables include unlimited telephone consultation with analysts, META Group briefings, teleconferences, strategic plan reviews, on-site half-day briefings, written research, and conferences. META Group's Web site, <http://www.metagroup.com>, provides access to written research.

META Group's Workgroup Computing Strategies provided assistance in developing these guidelines. Research and analysis in this service is focused on client/server deployment and intranet-related technologies and applications, with emphasis on groupware, decision support applications, mobile Web-based systems, PC hardware platforms, system software, client/server cost models, and operations management tools.

Giga Information Group, established in 1995 by Gideon Gartner, offers unified research coverage in a single service known as the Giga Advisory. Access to research and analysts is based on a per-user pricing structure. Standard deliverables include published research (the more formal Planning Assumptions and the informal IdeaBytes, written in response to customer inquiries), audioconferences known as GigaTels, personal consultation with analysts, briefings, and conferences. Access to published research and submission of inquiries is accomplished through GigaWeb, an Internet-based interface, at <http://www.gigaweb.com>.

All three research and advisory services are Qualified Information Systems Vendors for the State of Texas. Information about pricing can be obtained by visiting the General Services Commission's Web site, <http://www.gsc.state.tx.us/stpurch/qisv.html>, or by phoning (512) 463-8889. The Department of Information Resources has negotiated statewide contracts with META Group and Giga Information Group. To inquire about participating in the contract, contact DIR's Cooperative Contracts at (800) 464-1215 or (512) 305-9713.

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Endnotes

- 1 Details on the MLPP program are available from the Texas Public Finance Authority. The TPFA can be reached at (512) 463-5544, or via the Web at <http://www.tpfa.state.tx.us>.
- 2 The GASB text refers readers to standards set up in the Financial Accounting Standards Board 13 (FASB 13), subject to the accounting and financial reporting distinctions of governmental funds and expendable trust funds. See the *Codification of Governmental Accounting and Financial Reporting Standards*, Norwalk, CT: Governmental Accounting Standards Board, 1994.
- 3 Several major IT research firms have studied Total Cost of Ownership (TCO) issues. TCO models can include the purchase price, staff/maintenance time, overhead, and line of business costs. A good overview of several different approaches can be found in Carol Hildebrand's "The PC Price Tag," *CIOenterprise*, October 15, 1997. The article is available online at <http://www.cio.com>.
- 4 Sean Doolittle, "Cash Or Contract?" *PC Today*, November, 1997, 82.
- 5 J. Pucciarelli et al., *PC Leasing: A Strategy for Managing the Desktop*. Gartner Group, Equipment Asset Management Service, April 28, 1997, 21.
- 6 The META Group has issued several discussions on data center operations, pricing, and decision-making. Two examples are: "CMOS: The Price Is Right?" *Enterprise Data Center Strategies* (Stamford, CT: META Group, July 3, 1997) and "2001: A Data Center Odyssey," *Enterprise Data Center Strategies* (Stamford, CT: META Group, July 22, 1996).
- 7 Dennis Callaghan, "Leasing is Midrange Answer for Some." *Midrange Systems* 10, n.15, September 26, 1997, 1.
- 8 Gilbert Held. *Cost-Effective Management Practices for the Data Center*. Auerbach Data Center Operations, 41-02-30.1 (New York: Auerbach, 1997).
- 9 The General Services Administration (GSA) offers leasing programs through their Federal Supply Service and their Federal Computer Acquisition Center. Information can be found on GSA's web site at <http://www.gsa.gov>. The Military Health Services System in the Department of Defense recently decided to lease IT equipment. Their policy can be found at <http://www.ha.osd.mil/hmSpPrfr2.html>.
- 10 See Stan Peck and Brian Eden's article, "Leasing of information technology." *CMA Magazine*, November 1996: 17-19.