InSide

Gartner

Management Update:
Total Cost of Ownership Analysis
Provides Many Benefits

Gartner's analysis can help managers gain insights on the real-world practical uses of total cost of ownership (TCO), and how TCO can be used to justify IT investments, validate IS initiatives, confirm assumptions about return on investment and keep vendors honest.

Putting TCO Into Perspective

TCO is a concept Gartner pioneered more than 15 years ago, and it has the attention of many top IT managers. Gartner believes that a study of TCO can lead to cost reduction, but the TCO numbers reflect only part of the story.

A number of TCO myths have appeared and created some misunderstandings. Those myths include:

Management Update:
Ten Major IT Asset Issues
Managers Should Address

Information technology must effectively support a variety of technology-oriented business initiatives. That means that IS organization managers must maximize the productivity of IT assets without risking service. Gartner's recommendations can help those managers address the major IT asset issues.

Major Issue No. 1: Cost Control

Best Practice: Enterprises that take a life-cycle approach to managing IT assets can take advantage of market conditions that yield significant price and service opportunities.

Cost data from Gartner Measurement shows that best-in-class IT asset management programs can dramatically reduce an IT infrastructure's total cost of

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Management Update:
Total Cost of Ownership Analysis Provides Many Benefits (continued from page 1)

- TCO is all about cutting costs
- TCO is foremost about technology
- Enterprises should strive to attain Gartner's TCO numbers
- The IT platform with the lowest TCO is the best choice
- "Soft" costs don't count

TCO is a critical management tool that aligns IT operational efficiency goals with business performance requirements. TCO helps enterprises to:
- Provide services at appropriate costs
- Improve processes
- Develop best practices
- Increase operational efficiency
- Deliver services more effectively

Gartner bases its published TCO numbers on a specific set of assumptions that likely don't reflect the environment in your enterprise. The only valid TCO numbers come from an enterprise's own assessment. An enterprise may have higher or lower numbers than those published by Gartner — which may be alright, depending on the business factors involved.

TCO provides only part of the data needed to make a comprehensive analysis of any operational decision — whether it's related to technology, processes or people. Therefore, when making those kinds of decisions, enterprises should weight TCO accordingly with other critical factors.

A key tenet of TCO is the indirect cost of operations, which are sometimes called soft costs because they often occur outside the budget of the operational manager. Soft costs are critical to the understanding of enterprise costs. They represent real expenses, and ignoring soft costs will generally cause TCO strategies to fail.

A Brief Overview of TCO

Strategic Imperative: Because TCO can be misinterpreted and misused, managers need a thorough understanding of how and when to use TCO.

TCO aims to capture all costs of IT investments throughout the IT asset life cycle (see Figure 1).

Costs are accounted for during:
- Planning and acquisition
- Deployment
- Management and support
- Retirement or replacement

Those costs are then annualized to normalize labor and capital costs. Thus, TCO represents a standardized, repeatable, asset-based methodology that can assess the annualized life-cycle cost of an IT infrastructure. Managers should use TCO as a proxy whenever a financial analysis requires the cost of an IT infrastructure.

Analysis of TCO data often shows that the purchase of an IT asset represents only a small fraction of its total cost. For example, a desktop computer's initial cost represents less than 20 percent of the system's TCO.

Because TCO studies are standardized and repeatable, managers can use TCO to measure the impact of change. TCO best measures the operating efficiency of an IT investment. That is essentially a metric for IS infrastructures (such as distributed computing, data centers, storage, telecommunications and call centers) and IS processes (such as change management, technical support and operations).

The TCO Index

At the core of the TCO tool is a consensus database called the TCO Index. The TCO Index is derived from:
- A Gartner Measurement database containing detailed results from benchmarks and TCO assessments completed during the past 18 months. (Gartner Measurement TCO assessments are typically done for global Fortune 2000 companies.) This database is normalized and averaged to provide a generic profile.
- Input from multiple Gartner Research experts incorporates current and projected pricing, practices, costs and vendor

strategies, all of which stem from daily interaction with Gartner clients, IT vendors and others in the IT industry. Gartner uses this information to provide a state-of-the-art profile of how technology is typically implemented — today and in the near future.

- Other sources within and outside Gartner (such as surveys and industry statistics)

The resulting TCO Index forms a baseline number for a generic IT infrastructure (see Figure 2 and see Figure 3):

- Hardware complexity
- Software complexity
- End-user organization complexity
- Implementation of best practices
- Industry profile

Figure 1
Example of a Comparison of Direct and Indirect IT Costs

TCO is a holistic view of costs across enterprise boundaries over time

Direct		Indirect
Assets	**Support**	**Labor**
Hardware and Software • Workstations • Servers • Peripherals • Local Area Network Assets	**Operations** • Workstation Technical Services • Server Technical Services • Network Technical Services • Planning and Process Management • Database Management • Service Desk **Administration** • Finance and Administration • IS Training • End-User Training	**End-User Operations** • Peer Support • Casual Learning and Self-Support • Formal Learning • Application Development for Personal Use • File and Data Management **Downtime**

Source: Gartner

Figure 2
TCO Measures Cost, Complexity and Best Practices

Complexity	Measures		Enterprise
End-User Organization	• Organizational Leverage • Multilingual/National • Dispersion • Business Function Mix	• User Type Mix • Response Time • Resolution Time • Support Availability	• System Usage • User Proficiency • Population Growth • User Moves	5.5
Software Technology	• Business Application Model • Client Software Complexity • Application Criticality • Workflow • Calendar/Group Scheduling	• Imaging • Database Diversity • E-Mail System Diversity • Productivity Application Diversity • Platform Diversity	• Internet Services • Intranet Services • Enterprise • Resource Planning • Software Rollouts	4.9
Hardware Technology	• Replacement Rate • Upgrade Rate	• Cascading • Multiple Cascades	• High-Performance Hardware • Mobile Computers	4.1
		Index	**5.0**

Normalized data based on functionality, service levels and cost drivers

Source: Gartner   1 = least complex, 10 = most complex

- Worker type profile
- Asset base
- Salary profile

The Critical Role of IT Infrastructure Investments

Tactical Guidelines:
- Enterprises that successfully implement best practices in their distributed computing infrastructure can reduce costs by as much as 50 percent.
- Although IS organizations should strive for operational excellence and customer intimacy, they should treat each mission separately and choose which one comes first. Those that mix these missions will fail at both.
- A TCO study should aim to determine whether IT cost structures align with the mission of the IS organization and whether the IS mission aligns with the needs of the business.

Every enterprise has a unique mix of capital and labor. In IS operations, these resources are applied to achieve a level of service, which may not meet the needs of the business. Gartner data show that enterprises seldom consider IS service levels adequate. Customer satisfaction averages around 3.5 on a scale of zero to 10 in Gartner's TCO benchmarks. This statistic, coupled with current management pressure to reduce cost, is driving most IS organizations toward an operational state in which efficiency equates with excellence.

Gartner TCO data highly correlates capital investment in the IT infrastructure with reduced labor costs, correspondingly reduced TCO and improved operational efficiency. Furthermore, service levels tend to improve with capital investment in newer infrastructure assets and IT management tools.

Some IS organizations have pushed beyond optimal TCO and also want to deliver optimal service — called "customer intimacy" (see Figure 4). This generally manifests itself in modest increases in capital investment, coupled with more significant labor dedicated to relationship management, service definitions and satisfaction monitoring.

Operational Excellence and Customer Intimacy

Tactical Guideline: Although enterprises should strive for operational excellence and customer intimacy, they should treat

Figure 3
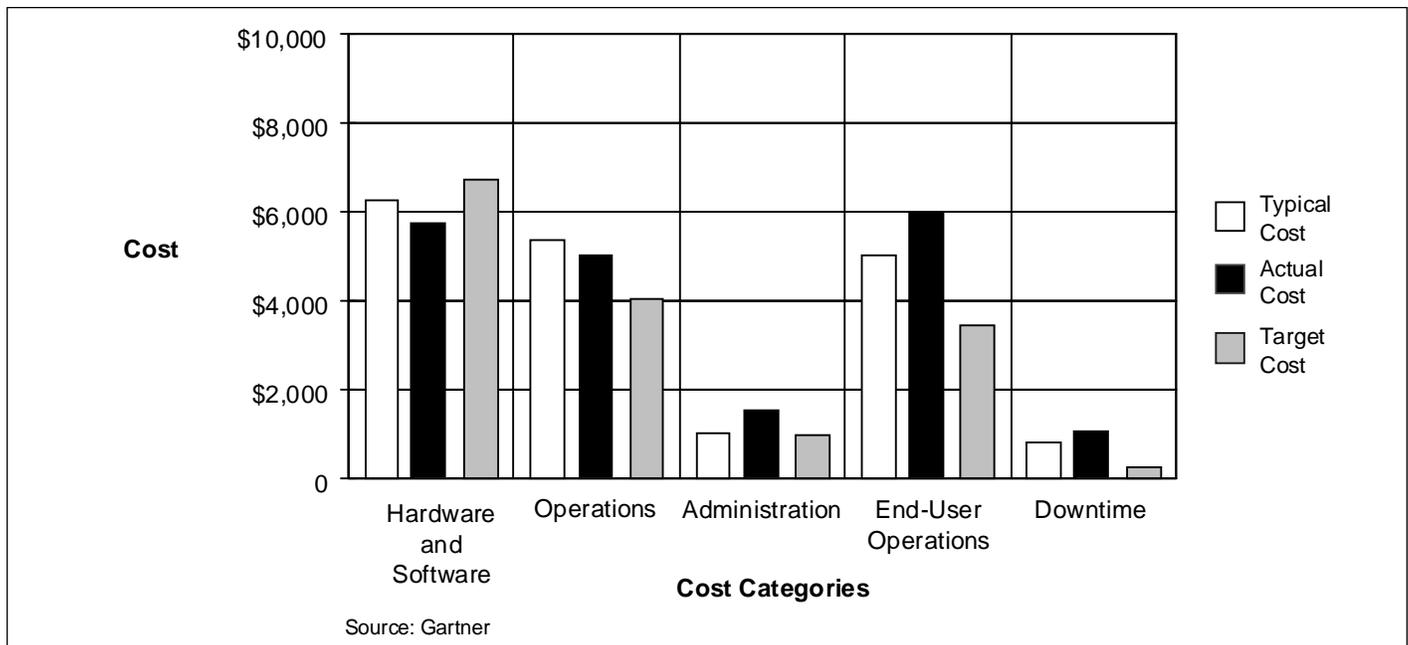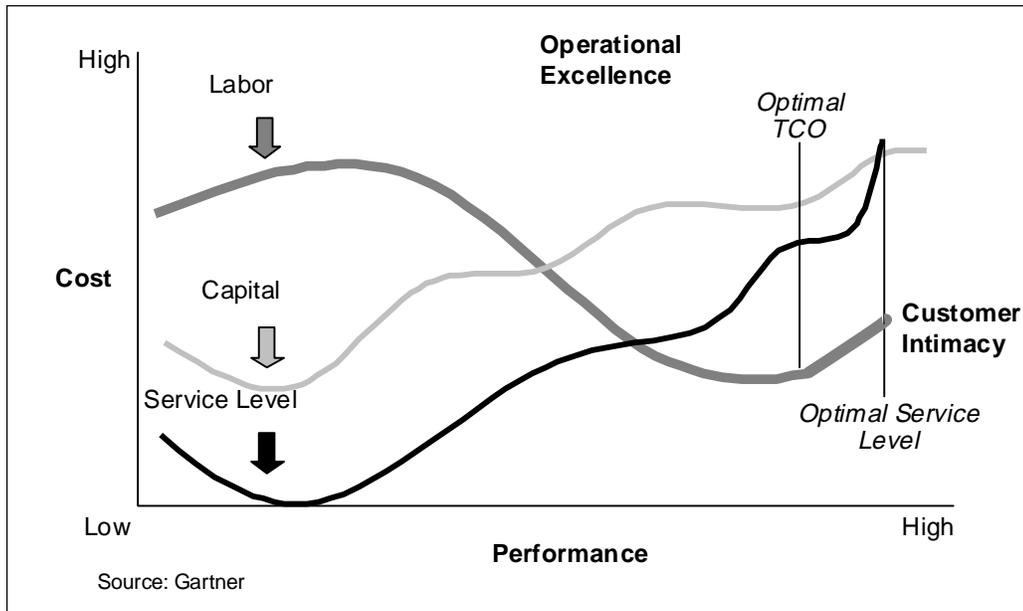**An Example of a TCO Analysis Overview: A Manufacturing Company**

Source: Gartner

Figure 4
Aligning IT Costs With IS Organization and Business Needs and Goals

almost universal desire by executive management, as well as its clearer set of metrics (such as costs and user-to-staff ratios). Furthermore, operational excellence provides a baseline on which decisions for changing service levels, sourcing, restructuring and other strategic decisions can be made.

customer intimacy can lead to improved customer satisfaction as well as reduced TCO.

Operationally excellent IS organizations have a cost structure ratio of 25:75 (direct to indirect), while customer-intimate IS organizations have closer to a 50:50 split. Ideally, the balance is iterative as an IS organization moves from operational excellence to customer intimacy, and then reduces costs without reducing service levels.

each mission separately and choose which one comes first. Enterprises that mix the missions will fail at both.

The two desired states of an IS organization are operational excellence and customer intimacy. Those common but clearly separate goals have different metrics, milestones and missions. Most IS organizations want to deliver operational excellence while having customer intimacy, and exhibit behaviors that combine the two objectives. That generally leads to accomplishing neither. Gartner believes that successfully reaching those states requires picking one and working toward optimizing for it.

Although either goal is acceptable, operational excellence provides a good initial objective because of its

TCO analysis is instrumental in first diagnosing operational cost and service levels, then providing targeted recommendations for change. For example, once an IS organization achieves operational excellence, it can decide to spend more on customer service, with a goal of gaining customer intimacy. Although this additional spending invariably adds to operational costs, it can significantly decrease indirect costs borne by end users for peer and self-support. The investment in

Gartner's analysis of one IS organization correctly determined that it was trying to achieve operational excellence while also reaching customer intimacy — although its mission was operational excellence, the IS organization was also pressed by top management to improve service levels. The failure to optimize around one desired state led to a lack of focus and mixed reviews on performance.

IT and Business Alignment

Tactical Guideline: Enterprises should use a standard process to assess IT and business alignment across the various management levels, and within different constituencies.

In a complex enterprise, "perfect" alignment cannot be measured, achieved or sustained. However, the

systems, infrastructure and organization must head in the right direction. Therefore, to keep IT alignment moving, enterprises should consider adopting some of the best practices for aligning IT and business operations, which include:

- Coordinating IT alignment with the strategic or long-range planning process
- Linking IT goals to business-level metrics
- Using scorecards and customer-satisfaction surveys
- Focusing on business-driven projects, not IT-driven projects
- Expecting difficulty when prioritizing IT projects among multiple business groups

Alignment most often fails at the point of establishing and managing the relationship between the IS organization and the business organization. Therefore, a good communication strategy is essential.

Benchmark Current Operations

Tactical Guideline: When considering the relationship between cost and level of service, ensure that cost is not the only criterion for an investment decision.

To determine the potential benefits associated with an IT investment, one must first assess the state of current operations and establish a baseline (see Figure 5). Without this baseline analysis of operations, the impact of any IT investment cannot be determined.

An effective baseline or benchmark measurement requires appropriate limits on the project's scope. A benefit and cost strategy should be used to help define the scope of the benchmark.

Categorize and Determine Benefits

Tactical Guideline: Understand if any benefits conflict, and do not sacrifice quality of service for the sake of reducing costs.

Benefits generally fall into one of three main categories:
- Costs reductions
- Quality improvements
- Risk mitigation

However, many IT investments yield two or all three types of benefits. For example, LAN management tools can significantly decrease help-desk costs by reducing the amount of time

it takes to respond to a caller. At the same time, a LAN management tool — such as remote access — can also help improve the overall level of customer satisfaction. The multidimensional benefits of an IT project can generally be identified during benchmarking and TCO analysis.

Good Communication Makes for Effective Governance

Tactical Guideline: Regularly communicate IS organization successes and value contributions to business units or other customers. Develop the format through dialogue and let individual business units decide which metrics they get reports on.

Traditional IT benchmarking or measurement methods lack a business context. The way in which many IS organizations report on their state of affairs reflects this.

Figure 5
An Example of Benchmarking Help-Desk Costs

Average Cost per Help-Desk-Handled Contact

Source: Gartner
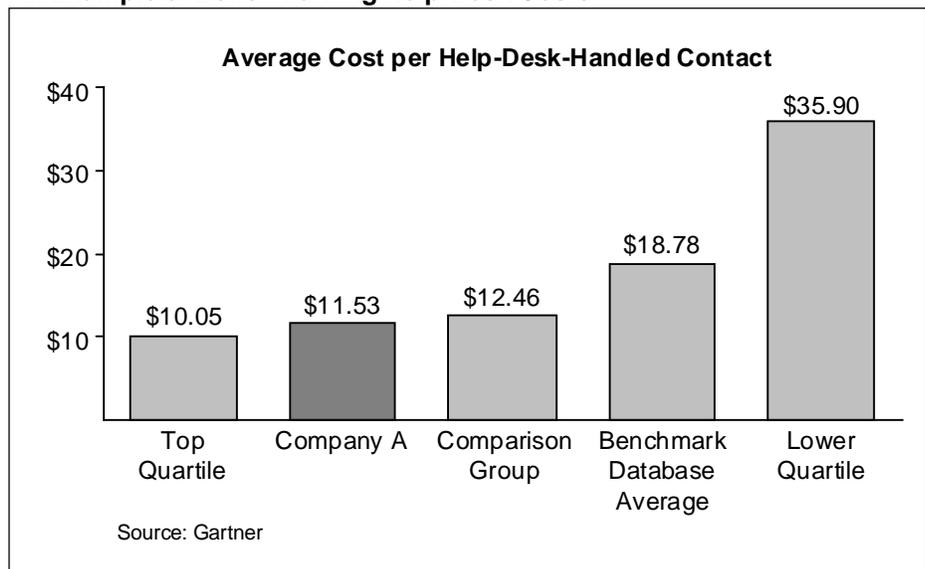
Consideration of business requirements traditionally has been limited to measuring a department's need for systems availability, security or software functionality. Few IT measurement systems venture beyond the confines established in service-level agreements. This IT-centered view of the business world precludes any notion of business contribution by the IS organization.

Correct communication of key performance metrics and the contribution of the IS organization to business success is essential. IS organizations need to express all IT performance improvements in simple diagrams and terms that have meaning to business managers, while restricting reams of financial statistics and numbers to appendixes or supplementary documents. They should also promote and increase commercial awareness within the IS organization, and celebrate high levels of customer satisfaction.

IT Vendors, Buyers and TCO

Tactical Guidelines:
- Many vendors use, abuse and misuse TCO as a marketing tool. Most vendors' public relations efforts are misguided and contain misinformation, and should be ignored. Many studies are flawed and probably should be disregarded. However, the Gartner TCO methodology has been licensed to more than 60 vendors that use it ethically to promote the best practices their products and services enable.

- Vendor TCO studies can be useful as long as the potential customer understands what the vendor is doing, and has a good understanding of its own TCO.

Vendors and service providers are paying more attention to methodologies and improved service delivery to make the best use of scarce resources. More than ever, tools and methodologies can help drive business and profitability.

The TCO Alliance Program enables technology providers to franchise Gartner's TCO methodologies to build TCO practices around planning, budgeting, forecasting and modeling IT scenarios. The alliance helps to create TCO-related services based on objective, vendor-independent methodologies and data from Gartner.

The TCO Alliance Program quickly builds a TCO-related practice with a top-quality, industry-standard methodology. Using vendor-independent data reduces skepticism from potential customers about the true value of services offered. Vendors can raise the level of customer contact and drive follow-on sales with strategic TCO methodologies embedded in strategic research. This comprehensive approach and additional non-vendor-related value provides a competitive edge.

Additional benefits to vendors include:
- Multidimensional support for your practice — from training to

research and data validation services
- Marketing support through Web listings and analyst speaking engagements
- Mapping sessions that help relate your products and services to Gartner TCO tools

When dealing with vendor TCO hype, enterprises should:
- Question the source
  - Who did the study?
  - Was it vendor-sponsored?
- Challenge the methodology
  - What are the elements considered?
  - Was it mutually exclusive, completely exhaustive?
  - What was the statistical set of cases?
- Ask how this applies to your business
  - What was the complexity of the case?
  - How is your enterprise different?

When dealing with vendor TCO studies, enterprises need to:
- Understand what the vendor is doing
  - High-level TCO analysis
  - Focused TCO assessment
  - The vendor is selling you something
- Know their own TCO
  - Shouldn't rely on a vendor to tell them
  - Use the vendor study in the context of a technology decision, not a product decision
- Ensure they get value from a vendor TCO program

Management Update:
Total Cost of Ownership Analysis Provides Many Benefits (continued)

– Gain insight into technology and best practices
– Use the vendor to help sell best practices
– Ask the vendor for TCO follow-up if you go forward

Recommendations

- Know your mission and use TCO to prioritize, guide and test progress toward meeting enterprise goals.
- Use TCO in governance as a common factor in financial and value analysis, and as a reporting tool for IS performance.

- Use vendor TCO programs to gain insight into how best practices can impact operational costs.
- Use internal TCO to assess specific technology, process and people decisions.

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This article is an excerpt of a chapter from a new report, "Winning Asset Management Strategies." The report is an offering of the Gartner Executive Report Series, a new business venture of Gartner Press that provides buyers with comprehensive guides to today's hottest IT topics. For information about buying the report or others in the Executive Report Series, go to www.gartner.com/ executivereports.

For related Inside Gartner articles, see:
- *"Management Update: IT Asset Management Is Mandatory, Not Optional," (IGG-08202003-01)*
- *"Management Update: Asset Managers Should Assess How Their IT Spending Stacks Up," (IGG-08132003-01)*
- *"CIO Update: To Control TCO, It Must Be Measured and Managed," (IGG-04162003-02)*
- *"Management Update: Five Sure Ways to Reduce IT Asset Costs," (IGG-03262003-04)*

Management Update:
Ten Major IT Asset Issues Managers Should Address (continued from page 1)

ownership (TCO). Just as important are the benefits that IT asset management can deliver to architecture and migration planning. Although IT asset management process improvements apply to many aspects of life-cycle management, the most-important opportunities for IT asset management stem from the earliest planning stages.

Taking a life-cycle perspective on managing IT assets provides opportunities to better negotiate acquisition and maintenance contracts. In addition, issues surrounding the disposal of older technology should also be considered when planning the acquisition of replacements (with the supplier disposing of older equipment). For example, each

technology acquisition should have a planned disposal date as a part of the life-cycle plan. This disposal date permits identification of assets that will need replacement and will require disposal in advance of the typical requisitioning process.

Major Issue No. 2: Shortening Technology Cycles

Buyer Issues

Market Condition: For the past three years, many enterprises have lacked the capital to refresh the IT environment and take advantage of improved price/performance offered by newer technologies.

Buyers of technology have the advantage in this market — if they

have a budget. With no pending technology imperative to prompt a wholesale migration to new hardware and software, few enterprises can convince their chief financial officers and CEOs to approve technology refresh plans. The economic downturn since early 2001 has pressured many IS organizations to place technology upgrade plans on hold.

IT capabilities continue to provide business units with opportunities for new products and improved services. Beyond the potential savings associated with automating back-office operations, new products represent the lifeblood of competitive markets.

IS organizations face the dilemma of maintaining robust services at reduced spending levels. They can use creative ways to find funding. However, for many IT organizations without proper funding, covering items (such as maintenance) using expense dollars should be a last resort.

Supplier Issues

Market Condition: IT suppliers are finding it difficult to make a compelling business case for infrastructure upgrades.

Helping established customers leverage their equipment base is one strategy to shorten sales cycles and introduce newer technology. This method provides a path that allows for the logical upgrade of infrastructure while providing investment protection.

Smaller enterprises and early adopters tend to require shorter sales cycles. Most buyers, however, are somewhat conservative. They want to ensure that their potential purchases have been validated in their labs as well as other customer environments. Sales cycles for such customers can be long.

Capital will remain constrained in the short term. Capital spending will require additional justification. Vendors will need more capital to fund sales cycles. Although the number of customers is finite, opportunities exist for vendors because products allow for new and profitable services as well as for competitive advantages, and aid in developing a customer's streamlined business model.

Major Issue No. 3: Inaccurate Business Forecasts

Strategic Imperative: Strategic planning for IT services will require greater emphasis on contingency planning should the business forecast fail to meet expectations. Therefore, IT asset management managers must position product and service contracts for significant out-year adjustments to safeguard against overcommitment.

The accuracy of business forecasts for the near and distant future represents a major risk to all providers.

Internal IS service providers will find it difficult to avoid price and service-level comparisons with managed service providers. Price comparison will be common among business units trying to optimize their IT investments.

To meet the competition, IS organizations will need to level the playing field by employing an array of pricing strategies to maintain its customer base. In addition, IS organizations should include funds to invest in research and development, marketing and relationship management in their cost-recovery schemes.

Action Item: IS organizations must strive to improve the accuracy of business and usage forecasting to attain economies of scale associated with high use.

Major Issue No. 4: Financial Engineering of Contracts

Strategic Imperative: The lowest price today does not always mean the best price tomorrow because IT environments and support demands will not remain constant throughout the contract duration.

To win business, a vendor bids a contract as fixed-cost and amortizes the risk over a long-term contract period. By following that strategy, the vendor shifts substantial risk into the initial three to five years of the contract.

Customers often view project work beyond the scope of the contract as a cost-containment management opportunity. Vendors view this kind of work as a cost-recovery opportunity, and usually price it at above-market rates.

When the business climate changes for the customer, project-based work volumes often increase dramatically. As a result, customers believe vendors are gouging them on prices and want to renegotiate pricing — or to exit the "bad contract."

Major Issue No. 5: Contract Negotiations and Management

Strategic Planning Assumption: By the end of 2004, 75 percent of IS organizations will refocus their role

on brokering resources and facilitating business-driven demands, rather than on being direct suppliers of IT services (0.8 probability).

Regarding contract negotiations and management:

- Most IT managers will be managing contracts or managing through external service providers to fulfill IS organization responsibilities.
- Most IT managers are ill-equipped assume contract management responsibilities.
- Many contract relationships fail because of difficulties encountered when interpreting terms and conditions.
- Understanding where the difficulty lies and addressing corrective action in a cooperative environment can remedy most problem situations.

Enterprises seeking better contract negotiations and management should build in contract management terms, consider renegotiation and conduct regular performance reviews.

Action Item: Build a contract management template.

Major Issue No. 6: Software Costs, Usage and Smart Contracting

Strategic Planning Assumption: Through 2005, 80 percent of enterprises engaging in "all-you-can-eat" agreements will pay at least 20 percent more for licenses and

maintenance than they would for a "pay-as-you-go" agreement (0.7 probability).

Gartner has seen examples where an enterprise was offered high discounts to license more software than it originally wanted to license. Discounts may have been offered at 80 percent off list for a complete "solution" of products with a list price of $10 million. The enterprise sees this as an opportunity to get what it thinks is a great deal for only $2 million and goes ahead with the purchase.

Often, software vendors offer such deals at the end of a fiscal quarter or year. That leaves only a few days to finalize contract terms and conditions — not enough time to give much thought to the possible future costs of such a deal.

Gartner recommends that enterprises examine such deals carefully. Their result is often not what is expected. For example:

- Since maintenance and support costs start from the day the contract is signed, the enterprise will pay that ongoing cost immediately.
- Frequently, only a few modules are used in a production environment. If the contract did not address issues such as removing unused software from maintenance, the enterprise may have to continue support payments for the entire package, even though only some of the software is being used

to support business operations (see Figure 6).

Action Items:
- Establish a conservative but realistic forecast of requirements for the vendor's products during the contract period.
- Compare proposed license and maintenance costs with the price of just what the enterprise requires.
- Evaluate what the vendor offers against buying only the software that the enterprise will install in the next six to 12 months.
- Negotiate the right to remove unused licenses from support.
- Ensure all relevant stakeholders in the enterprise understand any license restrictions.
- Include the right to new functionality in any agreement.

Major Issue No. 7: Disposal Regulations and Risks

Tactical Guideline: Successful life-cycle management programs will transform disposal of equipment from an event to an ongoing process.

Most computers that are more than four years old have little economic value. However, disposal of the obsolete machines involves four substantial risks:
- Business risks can include access to the enterprise network from:
  – Embedded log-on codes
  – Proprietary data inadvertently distributed when left on equipment that was sold

- Legal risks can include:
  - Software licensing and piracy issues
  - Income tax (charitable deductions could be disallowed)
  - Sales tax (not collecting tax on employee sales)
- Environmental risks can include U.S. Environmental Protection Agency (EPA), state government and local toxic-waste regulations.
  - The disposal of computer equipment has been regulated in the United States under the Federal Solid Hazardous Waste guidelines.
  - Therefore, this equipment cannot simply be thrown out or placed in regular recycling centers because of the toxicity of some components.
  - Failure to comply with federal, state and local disposal guidelines can subject an enterprise to fines and even criminal prosecution.
- Data security and privacy risks are prevalent. Some of the security regulations governing the handling of an individual's nonpublic personal information or other sensitive corporate data include:
  - The Gramm-Leach-Bliley Act
  - The Health Insurance Portability and Accountability Act (HIPAA)
  - The European Union Data Protection Directive

Action Item: Enterprises should not overlook or underestimate the importance of an equipment disposal strategy and must clearly understand and carefully assess disposal alternatives.

Major Issue No. 8: Tool Selection and Implementation

Strategic Imperative: The ever-increasing technological complexities, dependencies and growth rates associated with IT components make automated data-collection and analysis tools an IT asset management requirement.

IT asset management software tools support the IS organization's capability to automate much of the labor-intensive data collection tasks. At the same time, they provide accurate and timely data from which the enterprise can make well-informed decisions about acquisitions.

Enterprises should use these tools to enhance IT asset management

Figure 6
Example of the Cost Difference Between Software Licensed and Software Used

What Was Licensed:			What Is in Production:		
Module A	$250,000		Module A	$250,000	
Module B	$400,000		Module B	$400,000	
Module C	$125,000		Module C	$0	
Module D	$50,000		Module D	$0	
Module E	$35,000		Module E	$35,000	
2,000 Named Users @ $1,250 = $2,500,000			1,200 Named Users @ $1,250 = $1,500,000		
Total List Licenses:	$3,360,000		Total Software Using:	$2,185,000	
Discounted 50%	$1,680,000		Discounted 40%	$1,311,000	

| Yearly Maintenance @ 20% | $336,000 | | Yearly Maintenance @ 20% | $262,200 |

Shelfware Cost: $73,800

- Evaluate against buying only software to be installed in next 6-12 months.
- Negotiate the right to remove unused licenses from support.
- Ensure you understand any license restrictions.
- Include the right to new functionality in agreement.

Source: Gartner

processes. They should not consider tools to be the IT asset management process itself.

Although overlaps in functionality exist, IT asset management tools fall into three broad categories:
- Autodiscovery tools
  - For networked assets
  - Collect data automatically
  - Access via dial-in for mobile devices
  - Have variable update schedules
- Asset repository tools
  - For data maintenance and reporting
  - Consolidate physical, financial and contract data
  - Assist in life-cycle planning
  - Considered the cornerstone of IT asset management tools
- Software usage tools
  - Determine degree of usage
  - Aid in optimizing licensing and determining software compliance
  - Assist in server load balancing

Although enterprises have a wealth of tool products and vendors from which to choose, they should identify their current and future planning and reporting needs before any tool selection. One strategic decision enterprises must consider is whether to acquire a tool suite from a single vendor or consider the best tool from each category (which likely will come from multiple vendors).

Major Issue No. 9: Workplace Complexities

Strategic Imperative: IS organizations that simplify their IT environments will improve service and lower TCO by as much as 30 percent.

IS organizations can avoid the increasing complexity of IT architectures. Those that want to reduce complexity must take a life-cycle approach to managing the environment, and ensure that hardware and software migration plans take into account the impact of complexity.

Gartner's TCO and benchmarking studies show that of all potential actions an IS organization could take, reducing complexity most directly cuts costs associated with maintenance in a distributed computing architecture. Gartner has identified 31 items that directly affect the complexity of the environment.

The IS organization can control one-half of the high-impact items affecting complexity and TCO (see Figure 7).

Major Issue No. 10: IT Asset Management Program Effectiveness

Tactical Guideline: Although IT asset management represents a strategic process that takes 12 to 24 months to implement, enterprises can initiate some high-impact activities immediately.

To be successful, an IT asset management program must deliver results immediately. Many immediate opportunities to do this come from activities such as acquisitions and contract renewals, software license compliance audits and cost reductions. Enterprises should develop a timeline of IT asset management events for the next six months.

Midcourse Tune-Up

Tactical Guideline: An enterprise with a rudimentary IT asset management process will yield additional longer-term cost-reduction benefits if it expands the IT asset management program by:
- Formalizing how it establishes the IT asset management team
- Creating a life-cycle management approach
- Developing appropriate procedures

Many enterprises' basic IT asset management processes cannot support a life-cycle approach to asset management. Taking a life-cycle approach means that the enterprise always considers the potential effects IT asset management and TCO — from the earliest phases of migration and acquisition planning, through understanding the impact and timing of asset disposal. Once established, the life-cycle approach enables the IT asset management team to determine whether the enterprise needs additional asset management tools.

Figure 7
Top Factors Affecting IT Complexity and TCO

Items that Affect Complexity and Total Cost of Ownership	Impact on TCO	Controllable
Growth of Applications e.g., 20 in 1980 vs. 200 in 2003	High	No
Number of Operating Systems or Versions	High	Yes
Diversity of Technology Vendors	High	Yes
Geographic Dispersion of the Workforce	High	No
Percentage of Knowledge Workers in Enterprise	High	No
Number of Unique Service Levels	High	Yes

Source: Gartner

Adopting a life-cycle approach requires a multifaceted team with key skills and organizational breadth. Gartner recommends that the IT asset management team include representatives from:
- Purchasing
- Legal
- Finance
- Business units
- Contract management
- IS organization

Best-in-Class IT Asset Management

Tactical Guidelines:
- Hallmark attributes of best-in-class IT asset management environments include:
  – Learning from others
  – Understanding current and future asset management and reporting needs
    – Striving to continuously improve on service, cost and flexibility
- Do not assume anything when it comes to IT asset management. Some of the best examples of cost savings come from mundane tasks such as routine invoice auditing.

Best-in-class IT asset management programs can manage technology and economic risks for the enterprise by:
- Understanding and managing TCO:
  – Understand differences between fixed and variable costs
  – Strive to reduce complexity
  – Plan within architectural guidelines
    – Realize that software now represents a bigger issue than hardware
- Establishing a metrics program:
  – Focus on standardization
  – Understand industry performance
  – Measure process and well as product
  – Report performance openly
- Integrating IT asset management processes with:
  – IT moves, additions and changes
  – Configuration management
  – Help-desk services
  – Financial planning

Recommendations

- Through mid-2004, cost control will be the IT asset management

Management Update:
Ten Major IT Asset Issues Managers Should Address (continued)

mantra. Don't fight it — embrace it.

- For new acquisitions, establish a target replacement date. Use the replacement date to consider warranty uplifts, lease vs. purchase decisions and software licensing.
- Beware of financially engineered contracts. If it seems too good to be true, some hidden risks may be present. Assume nothing.
- Think of IT asset management as a process, not a project.
- With IT management processes, continuous improvement is

necessary to match the continuous changes in the IT environment.

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Analytical source: Jack Heine,
Gartner Research

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Management Update:
Tips on How to Select an Application Outsourcing Vendor

To help ensure success, enterprises planning to engage an application outsourcing vendor should know the practical considerations associated with vendor selection and contracting models.

Gartner's Four Worlds of IT Services Model

Gartner's Four Worlds of IT Services model portrays how various application outsourcing options map to four approaches to IT services and sourcing (see Figure 8). The distinct value propositions of each alternative can be identified based on the delivery approach and value proposition.
- The Optimization and Management quadrants deliver enterprise-specific application outsourcing,

characteristic of highly customized traditional application outsourcing.
- The Access and Creation quadrants in which various application service provider (ASP) options — vertical ASPs, network-native ASPs, enterprise ASPs and independent software vendors — reside rely on a leveraged-delivery approach for application outsourcing.

Mapping various application types to the model reveals that many choices are available to enterprises, depending on the desired value sought (IT efficiency or business outcomes) or delivery method used (customized to an enterprise environment or accessed in a shared, or standardized model).

Contracting and pricing models will be influenced by the value and delivery desired, as reflected in the four quadrants illustrated in this model:
- **Management:** In this quadrant, enterprises' foremost concern is to optimize the value or cost-effectiveness of their capital investments in applications by applying resources and processes to maximize return on these assets. Legacy applications, highly customized to the enterprise, would typically fall under this category.
- **Access:** Here, enterprises do not want to own technology assets or build up large IT staffs, but they will procure the needed functionality to ensure maximized operat-

ing income. The provision of technology platforms to host the applications is appropriate in this area.

- **Optimization:** Enterprises in this quadrant are focused on their competitiveness — how to exploit the best resources to maximize market share or competitive advantage through the application of best-in-class expertise. Included here are commercial off-the-shelf applications and business solutions (such as knowledge management, business intelligence, SCM and CRM) that are unique to the enterprise.

- **Creation:** Here, enterprises are seeking the benefits of Internet connectivity, "net-native" application solutions, and the ability to connect their business applications with partners, customers and other internal and external stakeholders.

Action Item: Continually monitor the enterprise's application outsourcing strategies to detect instances when business objectives are in transition or change is imminent. A sourcing strategy must include migration plans.

The Services Maturity Life Cycle

Strategic Planning Assumption: Application management services will represent the largest portion of application outsourcing deals during the next five years. A mature offering, this market will grow at a

Figure 8
Application Outsourcing and the Four Worlds of IT Services

Source: Gartner
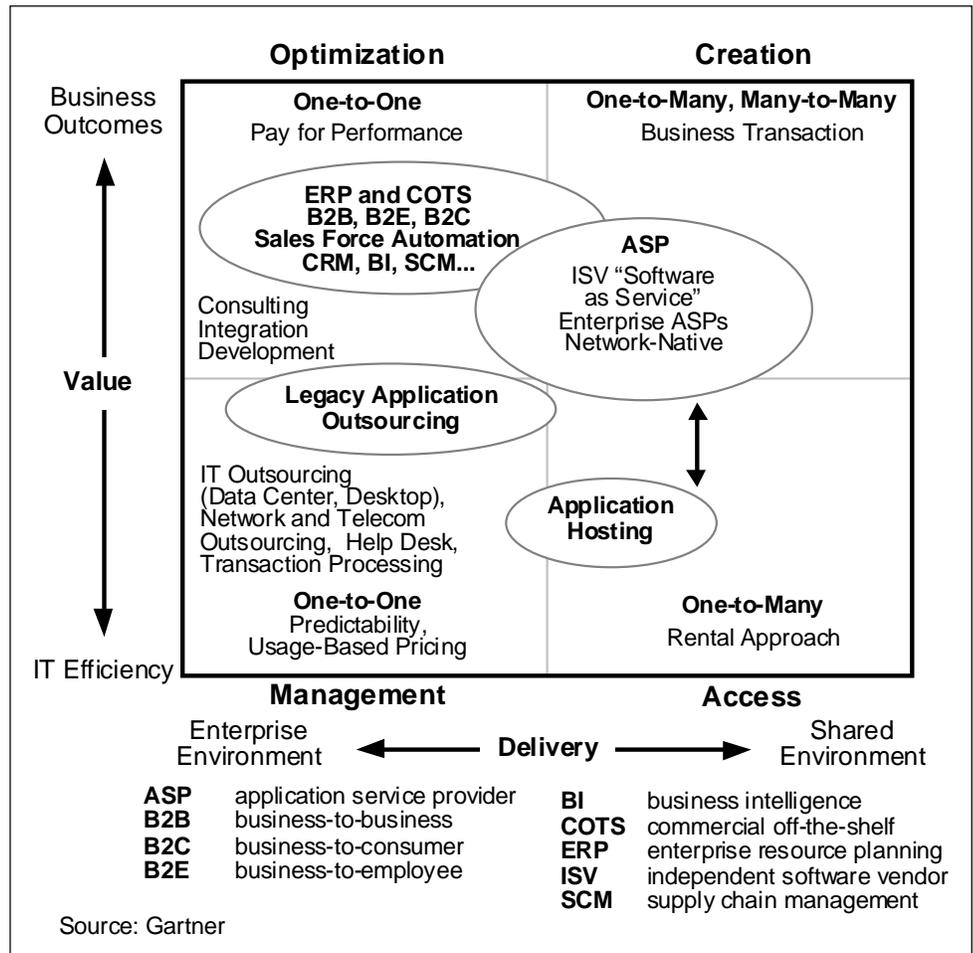
compound annual growth rate of 11.6 percent, and will exceed growth in the application development (4.3 percent) and application deployment (4.6 percent) markets, through 2007 (0.8 probability).

Understanding the relative maturity of application types and application services available in the market enables enterprises to establish reasonable expectations for the price and quality of services to be delivered. Enterprises thinking about

offshore services for the first time should consider outsourcing application services in the midlife or maturity phases of the services life cycle to minimize risk and take advantage of best practices and established, reliable processes.

Plotting various application products and services to be outsourced on Gartner's Services Maturity Life Cycle (see Figure 9) helps enterprises understand what to expect from their application outsourcer.

Management Update: Tips on How to Select an Application Outsourcing Vendor (continued)

Figure 9
The Services Maturity Cycle
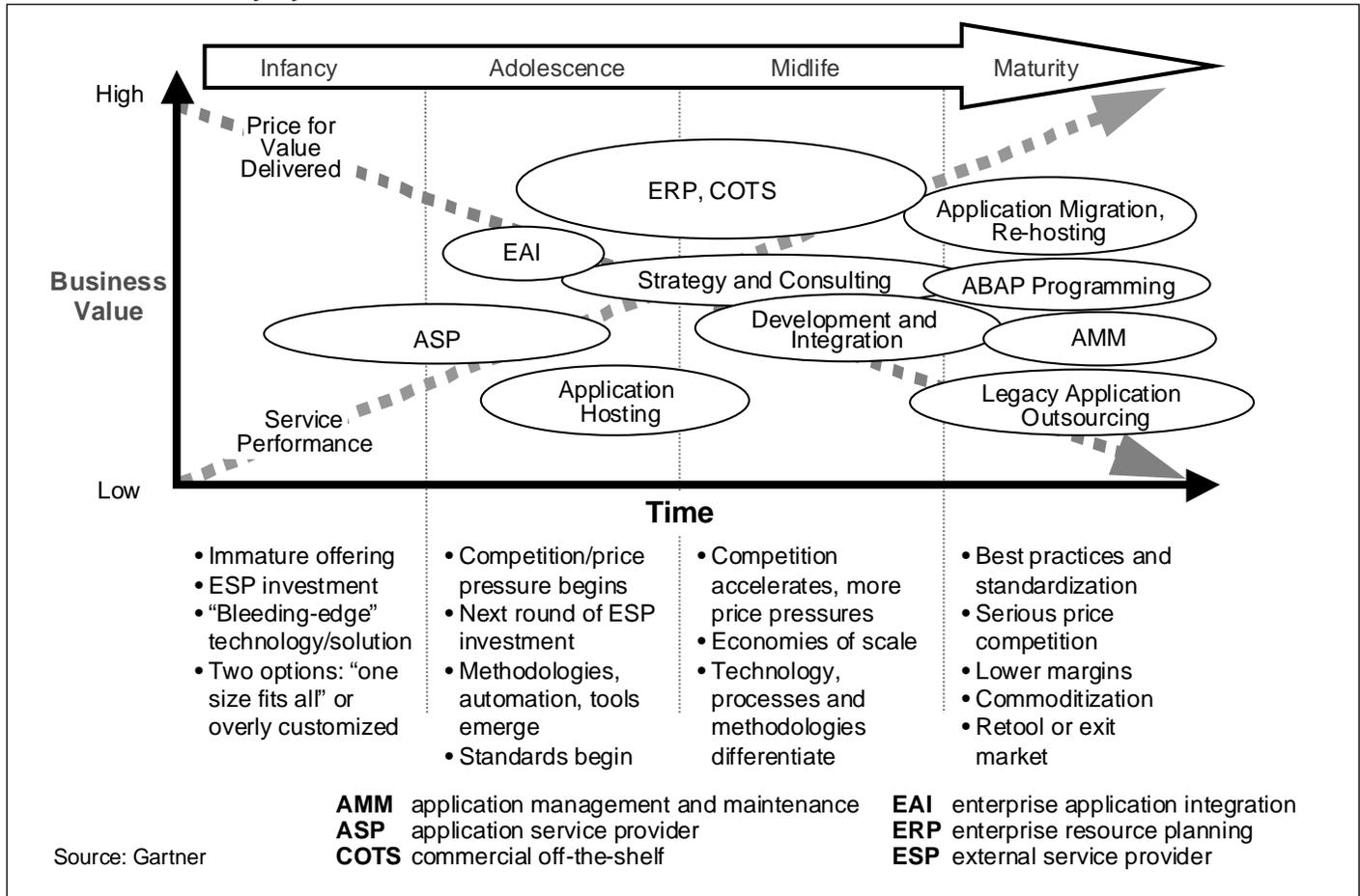
Application products, services and delivery methods in the infancy and adolescent phases are generally less stable and more costly, but early adopters will trade off stability for competitive advantage.

In the midlife phase, as services mature, methodologies and standard procedures emerge that can be tested and refined, bringing greater reliability and higher performance. Measurement tools also evolve to verify benefits. Typically, competition accelerates and price pressures result.

Once application products, services and delivery have been perfected to the point of being reliable, repeatable processes, the market reaches the maturity stage. Performance and costs stabilize further, and generally external service providers' (ESPs') service margins drop. As more ESPs enter a market and perfect best practices, application services become commoditized, and costs decrease further.

Evaluating Providers

Tactical Guideline: Vendor evaluation activities are not linear — they

are focused on and expressed as business outcomes, incorporating multiple assessments and validation points.

Vendor selection is a critical phase for any outsourcing engagement. Enterprise behavior in application outsourcing decisions underlines the importance of vendor reputation, references and past performance in the market.

Although every enterprise will behave differently, some patterns are evident (see Figure 10). Most enterprises initially learn about their

Figure 10
Selecting Your Application Outsourcer

How You Will Learn About Application Outsourcing Providers

- Past direct relationship
- Recommendations from industry peers
- Industry analysts
- Advertising or press coverage
- Presence at industry conferences
- Referrals from incumbent outsourcer

What Matters Most in the Pre-contracting Phase

- Responsiveness to RFI/RFP
- Technical expertise displayed
- Level of honesty and trust displayed
- Overall staff quality and professionalism
- Clarity of presentation materials
- Effectiveness of sales representatives

Final Vendor Selection — What Matters Most?*

Relationship	3.2
Trust	2.7
Cost	2.2
Quality	1.9

Most Valued Relationship Attributes*

Proactive Support	4.3
Flexibility	4.2
Trustworthiness	3.7
Project Management	3.6
Communication	2.7
Responsiveness	2.5

* Rank Order of Importance, Mean Provided

Source: Gartner 2003 Application Outsourcing User Research

RFI request for information
RFP request for proposal

options for application outsourcing providers through their own past experience with a vendor, and through recommendations from trusted sources.

In the pre-contracting phase, enterprises pay closest attention to responsiveness and evidence of technical competency. They also pay attention to relationship attributes — trustworthiness, quality and professionalism. When comparing vendors of equal technical skills with regard to their ability to deliver application outsourcing services, enterprises' decisions are most influenced, in order of importance, by relationship, trust, cost and quality. In terms of relationship attributes, once enterprises have engaged a provider, proactive support tops the list in importance, followed closely by flexibility.

Action Item: Before entering into an application outsourcing agreement, create evaluation criteria that incorporate the technical capabilities and relationship-based attributes that matter most to your enterprise, and weight those criteria accordingly.

Contract Terms

Strategic Planning Assumption: Through 2004, more than 50 percent of application outsourcing contracts will be renegotiated, but 90 percent of those renegotiations will result in the incumbent outsourcer being retained (0.8 probability).

Tactical Guideline: Enterprises should consider incentive-based alternatives in their application outsourcing contracts. Fixed-price or cost-based contracts with incentives ensure alignment of goals and outcomes, and balance the risks for both parties.

Management Update: Tips on How to Select an Application Outsourcing Vendor (continued)

Enterprises will need to determine the optimum contract length and pricing model for their outsourcing engagements. Preliminary user research conducted by Gartner (see Figure 11) shows that the average contract term for application outsourcing engagements is three years.

Not surprisingly, most enterprises favor fixed-price contracts for their application outsourcing engagements, where services are provided based on a predetermined fee structure. Enterprises tend to favor this option when the desire for predictable pricing over the term is paramount, and the willingness to

take on risk is low. Fixed-fee contracts are most likely to be used for engagements with well-defined services and service levels. The problem with fixed price contracts is that renegotiation often occurs prematurely, and without incentives there is little motivation for improvements.
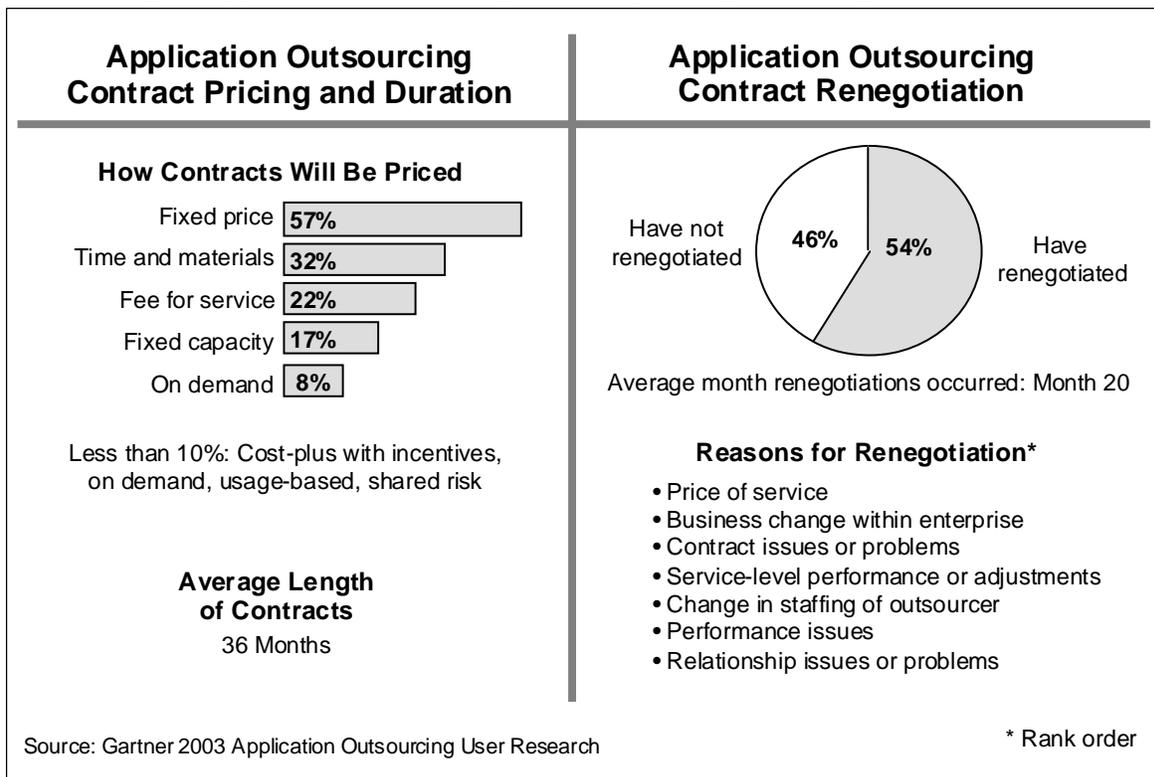
Renegotiation in outsourcing engagements is not unusual; in fact, Gartner's user data indicates that it occurs more than 50 percent application outsourcing engagements, typically somewhere around the 20-month point. The reasons for renegotiation are varied, but, surprisingly, performance issues

are low on the list. Users report that pricing and business change in their enterprise were the most common factors in renegotiation.

Summary

- Before making outsourcing decisions, enterprises must understand how their application environments and desired outcomes map to the various application outsourcing options.
- Continually monitor the enterprise's application outsourcing strategies to detect instances when business objectives are in transition or change is imminent.

Figure 11
Contracting for Application Outsourcing — Terms, Pricing and Renegotiations

| Application Outsourcing Contract Pricing and Duration | Application Outsourcing Contract Renegotiation |

How Contracts Will Be Priced

Fixed price: 57%
Time and materials: 32%
Fee for service: 22%
Fixed capacity: 17%
On demand: 8%

Less than 10%: Cost-plus with incentives, on demand, usage-based, shared risk

Average Length of Contracts
36 Months

46% Have not renegotiated
54% Have renegotiated

Average month renegotiations occurred: Month 20

Reasons for Renegotiation*
- Price of service
- Business change within enterprise
- Contract issues or problems
- Service-level performance or adjustments
- Change in staffing of outsourcer
- Performance issues
- Relationship issues or problems

Source: Gartner 2003 Application Outsourcing User Research

* Rank order

- A sourcing strategy must include migration plans.
- Before entering into an application outsourcing agreement, create evaluation criteria that incorporate the technical capabilities and relationship-based attributes that matter most to your enterprise, and weight those criteria accordingly.
- Enterprises should consider incentive-based alternatives in their application outsourcing contracts.
- Fixed-price or cost-based contracts with incentives ensure alignment of goals and outcomes, and balance the risks for both parties.

- Be sure the engagement is a win/win deal for both sides. Cost savings are important, but don't attempt to squeeze every nickel out of the deal.
- Prepare your organization for change. Don't underestimate the level of change and cultural impact.
- Keep energy and momentum high. Application outsourcing engagements are not self-managing, and there are no shortcuts to a good deal.

Written by Edward Younker,
Research Products
Analytical source: Allie Young,
Gartner Research

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- *"Management Update: Five Sure Ways to Reduce IT Asset Costs," (IGG-03262003-04)*

At Random

Affiliated Computer Services, Lockheed Martin Swap Should Go Smoothly. On 1 August 2003, Lockheed and Affiliated Computer Services (ACS) announced that Lockheed Martin Information Technology will sell its commercial IT services and commercial outsourcing business to ACS for $107 million. The companies said ACS will sell a majority of its federal government business to Lockheed for $658 million. ACS will retain its business process outsourcing (BPO) business with the U.S. Department of Education as well as pursue BPO deals in the federal healthcare market. ACS also retains some task order business with Hanscom Air Force Base.

ACS's go-to-market strategy heavily focuses on BPO and the commercial and state and local government markets, so the company's decision to divest most of its federal IT services business is not surprising. During the past several years, ACS's public sector work has primarily focused on state and local governments and public education. The vendor has engaged in few IT outsourcing engagements in the federal sector. ACS was not well positioned to compete against the largest systems integrators and outsourcers for large, complex IT service and outsourcing deals for federal customers. Even though ACS already has a commercial presence, acquiring Lockheed's commercial IT business will give the company access to several large IT outsourcing customers, to which it can try to sell BPO services.

Lockheed's acquisition supports its strategy of continued growth in the federal market. ACS customers should find the transition to Lockheed seamless. Lockheed brings expertise in federal government outsourcing that will

complement the ACS services it has acquired, and the deal adds clients to Lockheed's base of desktop and distributed outsourcing. The deal will not bring many new customer synergies, however, as Lockheed has strongly established relationships in defense, intelligence and civilian agencies.

Lockheed's decision to sell its commercial business is surprising, given its assertions that it intended to grow its commercial business. Lockheed had focused on building a more diversified portfolio of government and commercial IT services and outsourcing. The company appears to have been interested in building a commercial practice to compete for higher-margin commercial outsourcing as well as to gain competencies and innovation to bring back to its federal customers.

Although these transactions should go smoothly for Lockheed and ACS customers, they should address any problems now, before the transactions have been completed.

Analytical sources: Lorrie Scardino and Christopher Ambrose, Gartner Research

California Privacy Legislation Indicates National Trend. On 30 July 2003, Californians for Privacy Now, a political group, announced that it has collected more than 550,000 signatures supporting a ballot initiative that would prohibit California financial services providers (FSPs) from sharing customer data with third parties without explicit opt-in permission from the customer. On 29 July 2003, U.S. District Judge Claudia Wilken in Oakland, California, ruled that California cities and counties can require banks to get customer approval before sharing their financial information with third parties.

The ballot initiative proposed by Californians for Privacy Now is more restrictive than the bill introduced by California Representative Speier and recently defeated in committee. This initiative aims to motivate the legislature to revisit Speier's less-restrictive bill before 20 August 2003, the deadline for filing to include the new initiative. If the California legislature can write and pass a compromise bill before the deadline, backers of the ballot initiative have indicated that they would drop their efforts.

FSPs in California should anticipate that some level of restrictions on the use of customer data will pass by mid-2004. They should evaluate methods of tracking customer's opt-in preferences and begin initiatives to solicit opt-in permissions from customers who have not.

FSPs throughout the United States should view these legislative and judicial efforts as indicating a national trend. Legislation similar to what has been proposed in California has been in place in North Dakota since 1985. However, adoption within a market as large as California will accelerate the trend in other states. FSPs have two options: self-regulate now or wait until the state and federal governments regulate them.

Analytical source: Walter Janowski, Gartner Research

Buying Mercator Software Will Extend Ascential Software's Reach. On 4 August 2003, Ascential Software announced its intent to acquire Mercator Software for $106 million in cash. Ascential expects to complete the transaction in 3Q03.

The shakeout under way in the application integration middleware market has hurt Mercator. Its sale to Ascential removes another pure-play vendor from the market and addresses concerns regarding Mercator's declining financial viability. Since 2000, Mercator has dropped from the fifth-largest application integration

vendor to the eighth-largest, with 3.3 percent of the worldwide market for integration broker suites (based on new license revenue). Mercator's 2Q03 license revenue declined 44 percent compared to 2Q02, and its total revenue dropped 18.4 percent, compared to 2Q02.

The purchase of Mercator comports with the strategy Ascential has followed since 2001, which has included growing through acquisition and broadening its data integration capabilities. The vendor has aligned its plans in response to growing demand for data integration functions in areas other than data warehousing, and the convergence of the extraction, transfer and loading (ETL) and application integration markets. Ascential made a reasonable choice when it selected Mercator, which has strong data transformation capabilities and a data-oriented approach to integration. Ascential can also tap Mercator's experience in IBM-oriented environments to enhance its own reseller relationship with IBM and build on Mercator's experience in vertical markets such as healthcare pay providers.

Ascential faces several significant challenges in delivering value from this acquisition. It must halt the declining revenue from Mercator's product line and deliver a "road map" for how the products will be integrated. It must also resolve the overlap in transformation functions from each company, which is the core of their technologies, as well other ancillary redundancies (for example, overlapping adapters for SAP R/3). Finally, Ascential must grasp the issues of business-to-business integration, the U.S. Health Insurance Portability and Accountability Act and financial straight-through processing. Ascential needs this understanding to sell Mercator products to audiences other than the data warehouse project teams it knows well. Retaining the Mercator sales force will be key.

Ascential has stated that it will continue selling and supporting the Mercator product line in the immediate future, but it may not retain all Mercator products in the long term (0.6 probability). Plans for the Mercator Process Integrator — sold under an original equipment manufacturing agreement with Versata — could change because the product's features go beyond the scope of Ascential's target market. Ascential and Mercator customers should look for detailed product plans from Ascential by early 4Q03.

Analytical sources: Ted Friedman, Roy Schulte and Joanne Correia, Gartner Research

MCI, Equant Take Enterprise Content Delivery Networks Into the Mainstream. On 30 July 2003, Equant announced Equant Cache Management, and on 28 July 2003, MCI announced Managed Enterprise Content Delivery Service. Both services manage a system of distributed caches on customer premises.

These two announcements, combined with Infonet's announcement of a managed caching service in April 2003, indicate that enterprise content delivery network (ECDN) technology has started to become mainstream. These offerings are all based on caching technologies, but distinctions exist. Equant outlined the broadest functions, with a focus not only on content delivery but also on Internet proxy, security services and Web-enabled application caching. This breadth reflects the strategy and capabilities of its caching partner, Network Appliance. MCI focuses on content delivery, particularly streaming media, which reflects the expertise of its partner, Fantastic. Infonet focuses on deploying caches as security gateways, an approach that reflects the strategy of partner Blue Coat Systems. Equant and Infonet are network service providers that primarily focus on managed services. MCI's Managed Enterprise Content Delivery Service and MCI Advantage indicate that it will expand its portfolio in this area.

Capital expenditure has posed the biggest obstacle to deployment of ECDNs. Most branch-office caches range from $5,000 to $7,000 with support for streaming media adding $3,000 to $8,000 in licensing fees per cache. The

new offerings allow enterprises to deploy ECDNs without a one-time capital outlay. Monthly charges for managed services let firms ease into an ECDN. The managed component also makes it easier for enterprises to adopt content delivery since many are unfamiliar with this technology.

Enterprises that choose a managed service option should evaluate the provider's caching partner to ensure that its strategy and direction matches the enterprise's caching plans.

Analytical sources: Lawrence Orans and Jay Pultz, Gartner Research

Prepare for Consolidation in the Internet Filtering Market. On 29 July 2003, Secure Computing announced a definitive agreement to acquire N2H2 for $19.9 million in stock. N2H2 shareholders must approve the deal, expected to close in 4Q03.

The Internet filtering market has slowed, and price pressure has intensified, especially at the low end where N2H2 competes, making consolidation necessary. In addition, enterprises have started to question the value of stand-alone Internet filtering products and want to integrate other functions. By acquiring N2H2, Secure Computing can better compete with Websense and SurfControl. N2H2's probe-style technology gives Secure Computing another approach to building a filter list as well as its own reporting capabilities (Secure now uses Wavecrest). But N2H2 does not offer the dynamic list building that SurfControl and Websense have.

Heightened competition in Internet filtering will come from several directions. Large enterprises are evaluating filtering from Web caching vendors (such as Blue Coat Systems and Network Appliance), which typically license URL lists and blocking from the filtering vendors. Appliances for SMTP and HTTP filtering from vendors such as 8E6 Technologies have proven popular among small and midsize businesses. Anti-spam vendors and filtering-focused firewall vendors such as Fortinet will probably also join the fray.

Similar acquisitions will likely occur through 1Q04. Antivirus vendors need best-of-breed filtering technology for their HTTP and network security product strategies. Also, as the firewall market focuses more on deep packet inspection of application content, vendors could absorb HTTP and active content inspection functions.

Secure Computing's recent acquisition track record should reassure N2H2 customers. Secure Computing has successfully incorporated the Gauntlet technology bought from Network Associates in 2002 into its firewall product. However, N2H2 customers may have to pay higher prices to stay with Secure Computing or shop around for a lower-priced deal at subscription renewal time. N2H2 customers should examine their subscription contracts for protections in case service levels suffer during the transition.

Prepare for further consolidation in the Internet filtering market and assess vendor, licensing and architecture models accordingly. Secure Computing will likely strengthen its position in the filtering market in the short term. Thus, enterprises will have another vendor to choose from, and SurfControl and Websense will feel more price pressure from customers.

Analytical sources: Arabella Hallawell and Bill Gassman, Gartner Research

Sun Microsystems Must Address Important Issues to Reverse Its Decline. On 22 July 2003, Sun Microsystems issued its financial report for fiscal 4Q03 and the full year, ended 30 June 2003. In fiscal 4Q03, Sun recorded revenue of $2.98 billion, down from $3.42 billion in fiscal 4Q02. Sun earned a fraction of a cent per share in fiscal 4Q03, compared with $0.02 per share in 4Q02. For all of fiscal 2003 Sun's revenue fell 8.5 percent from 2002 to $11.4 billion while its per-share loss of $0.18 in 2002 increased to a loss of $0.75 per share in 2003.

Sun's financial performance in part reflects its incomplete transformation from a hardware leader to a network computing and systems company. With increased competition from Linux in the low-end server market and from big rivals such as IBM and Hewlett-Packard on the high end, Sun realizes it can't rely on hardware sales for growth. However, efforts in server virtualization and on-demand computing (N1), software infrastructure (such as Project Orion), and services have not yet matured despite some progress.

Continued decline is likely but not inevitable because Sun has strong assets:
- $5.7 billion in cash and a slight profit in fiscal 4Q03
- Increasing profit margins from cost cutting
- Strong credibility in the Unix server business
- A large customer base (it's still gaining customers in government markets)
- Diversified infrastructure
- A reputation as an innovator and counterweight to Microsoft

Sun must build on these assets to reverse its slide. For example, Sun still has little credibility in software markets and must make the investments necessary to obtain it:
- Introduce a unique product set (N1 plus Orion plus services) and sell to new and existing customers
- Capitalize more on its lab projects such as JXTA
- Improve its marketing
- Communicate how network computing can generate substantial growth
- Create market momentum for Solaris x86 to capture edge computing opportunities now going to Linux

Sun recently articulated a strategy of selling its Orion software stack and N1 infrastructure to major service providers (such as mobile operators). Sun can grow its software sales if it interests these providers in Java back-end server infrastructure to support Java devices delivering those services. Sun will also continue to target Linux and Windows customers at the low end by promising to legally indemnify enterprises for using open-source software (where Solaris has its origins), a logical step. Nevertheless, some customers will view Sun's renewed emphasis on Solaris/x86 as being lukewarm toward Linux (it offers all of Linux plus much more). As Linux grows in capabilities, Sun will need to convince customers that supporting Solaris does not indicate a lack of commitment to Linux. Finally, Sun must meld these strategies with high-performance, reliable chips and servers (that is, chip multithreading and throughput computing) to differentiate itself from larger competitors.

Customers shouldn't worry about Sun's independence yet. Its cash and market valuation will continue to shield it from any potential acquirers until at least 2005. However, independence does not guarantee relevance in large markets. Sun's hardware and operating systems will continue to be supported in the long term. However, Sun must move quickly to show significant growth in software and throughput computing to prove this business has a future. Otherwise, the company's future will increasingly be in doubt.

Analytical source: Daryl Plummer, Gartner Research

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