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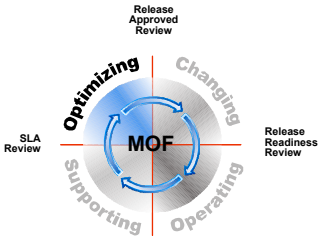
MOF Service Management Function Financial Management

patterns & practices



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Solutions for Management

Contents

Document Purpose

This guide provides detailed information about the financial management service management function (SMF) for organizations that have deployed, or are considering deploying, Microsoft technologies in a data center or other type of enterprise computing environment. This is one of the more than 20 SMFs defined and described in Microsoft® Operations Framework (MOF). The guide assumes that the reader is familiar with the intent, background, and fundamental concepts of MOF as well as the Microsoft technologies discussed.

An overview of MOF and its companion, Microsoft Solutions Framework (MSF), is available in the *Introduction to Service Management Functions* guide. This overview guide also provides abstracts of each of the service management functions defined within MOF. Detailed information about the concepts and principles of each of the frameworks is also available in technical papers available at www.microsoft.com/solutions/msm/.

Executive Summary

The objective of the financial management process is the sound management of monetary resources in support of organizational goals. Financial management ensures that any solution proposed by a foundational SMF (service continuity management, availability management, capacity management, workforce management) to meet the requirements defined in service level management are justified from a cost and budget standpoint. This is often referred to as a cost-benefit analysis.

Financial management encompasses many of the same accounting principles found in use today across a wide variety of industries. In common practice today, financial management for IT includes budgeting, cost accounting, cost recovery, cost allocations, charge-back models, and revenue accounting. The key aspects of financial management that ITIL and MOF address are its linkage to other service management functions.

The links to other service management functions include configuration management, change management, release management, and availability management. Financial management provides the expense, or cost, side of the equation for making a business decision with regard to changes in the IT infrastructure, systems, staffing, or processes. Knowing the costs of configuration and change request items is key to making intelligent business decisions.

Financial management also addresses the revenue, or benefits, side of the financial equation. Historically, IT has been largely viewed as merely a cost center; in recent times, however, IT has assumed greater importance as a revenue and profit center. ITIL and MOF encourage this view of IT service provision because it encompasses the entire financial picture with regard to defining, analyzing, building, and operating these services. This forms a very sound foundation for strategic business and market planning.

Process and Activities

Financial Management Overview

The objective of the financial management process is the sound management of monetary resources in support of organizational goals. Financial data provides the expense, or cost, side of the equation for making business decisions regarding changes in the IT infrastructure, systems, staffing, or processes. A properly functioning financial management process helps IT managers to make better-informed decisions for IT planning and investment.

The financial management process can also help to answer the infamous "Why does it cost so much?" question that customers of IT operations inevitably ask. Informed customers better understand the costs of IT services.

The following figure shows the areas of financial management: cost accounting, budgeting, project investment appraisals, and—in some organizations—cost recovery.

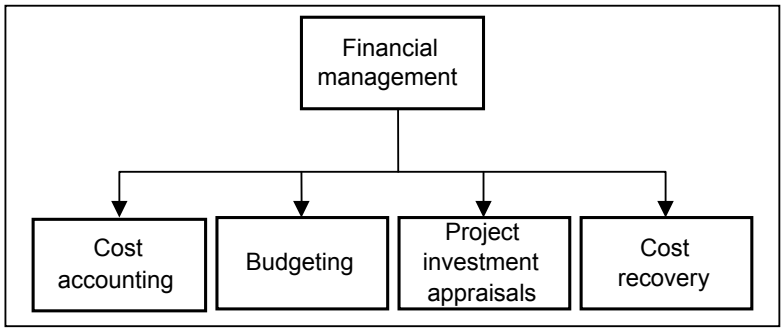

Figure 1.
Financial management process

Cost accounting is the monitoring activity of the financial management process. This activity involves the identification of assets and activities (cost elements) to which costs can be assigned. It also involves the development of cost allocation

schemes whereby the costs related to each cost element are distributed fairly and equitably to customers. Cost accounting is responsible for developing financial reports for management.

Budgeting is the planning activity of the financial management process. When developing budgets, managers plan future activities and assess the performance of current activities. The financial manager must gather information from a number of sources, including each organizational department that uses IT services and each service management function (SMF) within the IT department. Budgeting requires a great amount of communication and coordination, which has the indirect benefit of aligning the IT department's goals and objectives to meet organizational requirements.

Project investment analysis is the analyzing activity of the financial management process. The IT department is called upon to evaluate the costs and benefits of proposed changes. Methods of analyzing the financial impact of a change include payback period, net present value, return on investment, total cost of ownership, and real cost of ownership. Each method offers advantages and disadvantages. No one method is best for evaluating all changes.

Cost recovery is the charge-back activity of the financial management process. The IT organization charges the costs of services back to the users of those services. This activity involves the development of charge-back methods and the billing of costs to customers.

Benefits of Financial Management

With the surge in IT outsourcing, application hosting, and e-commerce, proper financial management practices are becoming integral to business operations. Implementing a formalized financial management process generates benefits in cost visibility, planning, optimization, and cost recovery.

The purpose of a company is to return a profit to the shareholders. The purpose of a non-profit or governmental organization is to achieve their stated goals and objectives within budget. The sole reason for the IT department's existence is to support the business in achieving these goals. While those in information technology may enjoy technology; their only reason for drawing a paycheck is because they are necessary to further the organization's goals.

The questions that IT management must be able to answer at any moment are:

- How do I, and my department, help the organization accomplish its goals?

- What does the IT department contribute to shareholder value?

Proper financial management of the IT department gives the IT manager these answers.

Cost Visibility

Proper financial management of the IT department provides management with visibility of computing costs. Cost visibility provides benefits including:

- IT provides services within budgets that are negotiated with customers.
- The costs of providing an agreed-to level of service are trackable and understandable.
- The IT department can trace costs and report the origin of costs to customers and executive management.
- Customers are fairly charged for the services being provided and the prices charged are more predictable.
- The IT department is able to compare the cost of providing services to the costs charged by outside vendors.
- Accurate cost data will assist the business unit in the preparation of accurate and realistic bids and proposals.
- Accurate cost data is necessary to optimize operations.

Planning

The development of a sound budget encourages and promotes better IT planning.

Customers are encouraged to be cost-conscious about the services they use and to educate individual users about the costs associated with their activities.

Planning focuses attention on the organization's goals and objectives. Planning results in fewer poor decisions. Planning helps the organization evaluate risk and take reasonable risks. Planning assists organizations in the optimizing quadrant.

Optimization

Budgets and accurate cost information provide metrics that can be used to measure performance, reliability, and customer satisfaction. For example, a report that measures actual costs against budgeted costs is a useful metric for assessing performance. Another example is accessing changes to ensure that they were implemented within their budget.

Comparing performance versus organization plans is one of the first steps in optimizing performance. The MOF optimizing phase utilizes the information collected through the cost-

accounting activity. The optimizing phase includes processes, procedures, and techniques to manage and reduce costs while maintaining or improving service levels.

In order to complete the optimizing activity, IT financial information must be collected and provided to the manager(s) responsible for IT optimization. The collection of this information and the production of appropriate reports take place within the cost-accounting activity.

Cost Recovery

Properly implemented cost accounts facilitate improved cost recovery. Cost accounts must be logical and easily understandable.

Many corporations today are utilizing cost allocation or charge-back models where business units are funding their own key IT projects. This places more accountability for the business value of IT projects in the hands of those who must justify the expenditure and prove the benefits. Implementing cost recovery puts more pressure on the IT groups to accurately collect costs and to become more efficient and cost effective.

Goals and Objectives

The goals and objectives of financial management are to be able to fully account for the cost of IT services, to attribute the costs to the services delivered to the organization's customers so that the costs can be recovered, to aid decision making by understanding the cost of IT services, and to provide business cases for changes to IT services based on a sound understanding of the costs involved.

Scope

The scope of the financial management SMF enables the organization to account for the cost of delivering IT services, as well as to:

- Identify assets and activities to which costs are assigned and develops cost allocation schemes to enable the cost elements to be fairly distributed to customers for services they have received.
- Develop budgets, based on planned future activities, and assesses the budgetary performance of current activities. The financial manager gathers information from each organizational department that uses IT services and each service management function (SMF) within the organization.
- Analyze the cost and benefits of proposed changes and new services. Financial management uses several methods

of analyzing the financial impact of a proposed request for change, including payback period, net present value, return on investment, total cost of ownership, and real cost of ownership.

- Recover the cost of IT services from the customers by developing charge-back methods and the billing of costs to customers.

Key Definitions

Capital costs. Capital costs are costs associated with the purchase or major enhancement of fixed assets—for example, computer equipment (building and plant) —and are often also referred to as "one-off" costs.

Cost element. If more detail is required in calculating costs, the major cost categories of hardware, software, employment, accommodation, and transfer can be further sub-divided into cost elements to provide more detail in calculating costs. For example, hardware might be divided into office, network, and central servers. The purpose of this is to ensure that every cost identified in the IT department can be placed within a table of costs by type, thereby enabling analysis to be performed by type—for example, all network costs.

Cost unit. In the context of computer services business code (CSBC), the cost unit is a functional unit that establishes standard cost per workload element of activity, based on calculated activity ratios converted to cost ratios.

Depreciation. The loss in value of an asset due to its use and/or the passage of time. The annual depreciation charge in accounts represents the amount of capital assets used up in the accounting period. It is charged in the cost accounts to ensure that the cost of capital equipment is reflected in the unit costs of the services provided using the equipment. There are various methods of calculating depreciation for the period: straight-line, reducing balance, and by usage.

Direct cost. A cost that is incurred for and that can be traced in full to a product, service, cost center, or department. This is an allocated cost. Direct costs are direct materials, direct wages, and direct expenses.

Fixed cost. Fixed costs remain unchanged even as the level of resource usage varies. Fixed costs include any costs that are negotiated prior to the initiation of the service, such as maintenance contracts for hardware components.

Indirect cost. A cost incurred in the course of making a product, providing a service, or running a cost center or department, but which cannot be traced directly and in full to the product, service, or department, because it has been incurred for a number of cost centers or cost units. These costs are apportioned to cost centers/cost units. Indirect costs are also referred to as overheads.

Net present value. The net present value (NPV) method evaluates the present value of cash flows that result from the investment less the initial outlay. To determine the present value, the cash inflows and outflows are discounted to the present time using a discount rate with the following formula:

Present Value = (Future Value) / $(1+\text{Discount Rate})^{n}$

Operational costs. Those costs resulting from the day-to-day running of the IT services section—for example, staff costs, hardware maintenance, and electricity—and relating to repeating payments whose effects can be measured within a short time frame, usually less than the 12-month financial year.

Payback period. Payback period measures the amount of time that it takes to repay the initial investment of an asset. The payback method is the initial investment cost divided by the anticipated annual savings or resulting increased revenue.

Total cost of ownership. The total cost of ownership (TCO) is defined as the total cost of an item over its useful lifetime. TCO analysis attempts to include all of the direct and indirect costs. TCO includes not only the purchase price, but also implementation and training costs, management costs, and support costs.

Variable cost. Costs can either be fixed or variable. Analyzing whether costs are variable is vital in calculating possible profits when business increases or decreases. Variable costs change over time in proportion to the resource usage.

Major Processes

Financial management comprises four main processes and a number of sub-processes as follows:

- Cost accounting
  - Service level agreements
    - Service level agreement and financial management

- Tracking performance
- Renegotiating the service level agreement
- Components of a service level agreement

- Cost classification
  - Setting up accounts
  - Capital costs
  - Operational costs
  - Direct costs
  - Indirect costs
  - Fixed costs versus variable costs
    - Fixed costs
    - Variable costs
  - Cost categorization
  - Cost units
  - Depreciation
    - Straight line depreciation
    - Usage
  - Cost accounting methods
    - Cost-by-customer accounting method
    - Cost-by-service accounting method
    - Activity-based costing
    - Request for change review and approval
- Project investment appraisals
  - Net present value
  - Payback period
  - Return on investment
  - Total cost of ownership
    - Total cost of ownership studies
    - Shortcomings of total cost of ownership
  - Real cost of ownership (RCO)
    - Measurement
    - Management
    - Managerial reports
      - Small organizations
      - Mid-size to large organizations

        - Outsourcing
- Budgeting
    - Budgeting benefits
    - Budget inputs
        - Service level agreements
            - Cost implications of service level agreement
            - Negotiation of service level agreements
        - Customer requirements
        - Internal cost inputs
        - Trends
    - Budget types
        - Operating budget
        - Capital budget
    - Budgeting methods
        - Prior year budgeting
        - Zero-based budgeting
    - Budget review
- Cost recovery
    - Transfer pricing methods
        - At cost
        - Cost plus
        - Flat rate plus premium
        - Market rate
    - Billing

Cost Accounting

Cost accounting is an inward-looking activity that examines the actual costs of performing IT activities. Cost accounting breaks down the costs associated with a particular activity and may assign these costs to a project or customer. Cost accounting can also be used to measure the efficiency of the IT department. Cost accounting does the following:

- Allows IT departments to track costs and to make informed decisions about how to best achieve cost savings related to IT activities.
- Allows IT departments to quantify and understand their costs.

- Helps users feel in control of costs and understand how the costs are being allocated. This reduces customer frustration and confusion.
- Assists managers in planning and controlling the operation of the IT organization.
- Cost accounting and cost management may protect the IT department from cost-based attacks from outside vendors.

To be effective, the accounting activity must be able to track the life cycle costs of all IT assets and to have a system for recording and tracking these costs. Life cycle costs include costs for procurement, maintenance, and disposal of IT components. The configuration management database (CMDB), which is a tool used in the configuration management process, can be used to facilitate cost recording and tracking. For more information on CMDB, see the MOF configuration management operations guide.

Accurate cost data is necessary in order to accurately and fairly charge customers. Based on the assignment of costs to departmental organizations, prices of IT services can be established and charged to the appropriate department.

Customer charging typically falls into one of three categories:

Information only. Costs are not passed on to customers. Using this method IT departments do not recover their cost from other departments but receive their fiscal budget from the enterprise. Costs are typically tracked to evaluate service performance and provide input to corporate budgeting for capital investment decisions, personnel training, and the purchase of consumables. The drawback of this method is that it does not influence user and departmental behavior. Users are more inclined to request IT services and use the services provided without considering the costs associated with providing those services. This method typically results in greater operational costs, yet at the same time does not require the overhead costs associated with billing customers.

Break-even method. In this method, sometimes referred to as "zero-profit accounting," costs must be accounted for and fully recovered from customers. This technique requires the accurate accounting of all costs and the billing of those costs to customers. However, customers are only billed for the costs incurred; no profit is extracted from the services provided.

Make a profit. The IT profit center charges customers in an effort to make a profit for services. Although this method

permits the IT department to act as an autonomous group within the enterprise, it may encourage customers to seek services from lower-cost outside vendors.

Of the three categories, the zero-profit method offers the most benefits and is assessed in the remaining cost accounting sections. The benefits of the zero-profit method include:

- The IT department is perceived as an integral part of the organization that is required to meet enterprise goals. It is not perceived as an outside vendor that is only trying to make a profit.
- The costs charged are the true costs of providing services to customers. Therefore, customers have a better understanding of what they are being charged and why.
- IT personnel have more of a stake in reaching corporate goals, as they are perceived as part of the enterprise team.
- There is less pressure from outside vendors forcing the IT department to make decisions based solely on costs. With the zero-profit method, decisions should be made with regard to organizational benefits as well as the cost implications.

Service Level Agreements

An IT financial management document would not be complete without discussing service level agreements and the important role that financial management plays with regard to establishing these agreements. SLAs describe the IT support services that are made available to internal customers and should be established for all IT services provided. SLAs include such information as the required availability and reliability of hardware and software applications, support hours, security, transaction response time, changing policies, systems maintenance, and so on.

The Service Level Agreement and Financial Management

The SLA is the contract between the IT organization and the customer. It spells out what services are being provided and at what cost. Cost accounts should be established to allow the manager to track the cost of fulfilling the SLA. Accurate cost data and properly written service agreements answer the question "What am I getting from IT and what does it cost?"

Tracking Performance

Providing the services agreed to in the service agreements drives the IT organization's costs. As part of the cost accounting activity, the financial manager collects and allocates these costs to the proper accounts. Accurate cost collection aids the IT manager

in determining the costs involved in providing the service levels agreed to in the SLAs.

This is important enough to restate. Accurate cost collection and properly written and implemented SLAs allow the financial manager and the customer to track the department's performance in providing agreed-to levels of service.

Renegotiating the Service Level Agreement

Accurate cost data provides information for negotiating future SLAs. Financial management is responsible for providing input for the prices that are negotiated with customers. In order to recover all operating costs from customers (or realize a profit if the IT department is a profit center), the IT manager who negotiates SLA agreements must have a complete understanding of the costs incurred for the services being provided.

This information is then used in the negotiation activity as justification for the prices being charged. Without accurate data and a complete understanding of the costs of providing services, IT managers are unable to negotiate agreements that are fair to each customer and still completely recover the costs of operating the IT environment.

Components of a Service Level Agreement

The SLA should clearly spell out the support activities provided, what kinds of costs are expected, how they are tracked, and who pays for them.

Factors in SLAs include:

- Fewer, more critical metrics
- Measurement of quality of service
- Coordination with customers
- Metrics agreed to by customers
- Systematic reporting to customers and IT management
- Metrics should reflect best practices and procedures (the metrics are the minimum performance, not the maximum performance)

For more information, see the MOF service level management operations guide.

Cost Classification

Before assigning costs to a particular customer, they must be classified and categorized. Costs are either capital or operational. Costs can be classified as direct or indirect, or fixed or variable.

Each of these classifications is useful when determining how to account for costs and how to assign the costs to customers. The

classifications are also helpful when negotiating service prices with customers as they provide the financial manager with justification for the prices being negotiated. Understanding and correctly categorizing costs also helps SMF managers make informed decisions by having a good understanding of how costs changes relate to changes in services levels provided.

Each of these classifications is discussed below.

Setting Up Accounts

Two of the most important questions the finance manager faces are "What information is important?" and "What information should be tracked?" Establishing cost accounts that match the desired information makes cost collection and reporting much easier.

Properly established cost accounts provide the visibility required to understand the cost implications of decisions and to manage the finances of the IT organization.

Capital Costs

Capital costs are costs that are incurred for the purchase or enhancement of fixed assets. For example, the replacement of a server or a network upgrade would typically be a capital cost. Capital items have a useful service of more than one year and a value greater than a predefined amount. Since the capital item has a life greater than one year, its cost is depreciated over the life of the item. The item must be tracked accordingly.

Capital costs are usually passed on to the customer as annualized depreciation cost. For example, if a server, used solely by the human resources department, is purchased for $8,000, has no salvage value, and has an expected useful life of four years, the accounting department is charged $2,000 per year (the depreciation cost) as part of the service being provided.

Operational Costs

Operational items have a life of less than one year. Operational costs include costs that are required to operate and maintain the IT environment, such as maintenance, payroll, training, utilities, and support costs. Some of the factors that influence operational costs include standardization, SLAs, automated tools, and outsourcing agreements.

Direct Costs

Direct costs are costs that can be traced to a particular activity or organizational department. Direct costs are the easiest costs to identify and quantify. Some of the costs that may be classified as direct costs include: development and testing, management, capital costs, outsourcing, training, maintenance,

communication, and procurement. However, if the costs cannot be traced to a particular activity or department, the costs could instead also be classified as indirect costs.

Indirect Costs

Indirect costs, which are also referred to as overhead costs, are costs that are not directly traceable to a particular department or customer. Therefore, the costs need to be apportioned among all of the departments or divided in a "fair" manner. Indirect costs are therefore the most difficult costs to account for. It is important to develop a consistent approach to allocating these costs to ensure that organizational departments perceive them as fair and equitable. Some indirect costs, such as downtime, shadow costs, and administrative costs, can be very difficult to measure and fairly allocate to the appropriate customers.

Fixed Costs Versus Variable Costs

Costs can either be fixed or variable. Analyzing whether costs are variable is vital in calculating possible profits when business increases or decreases.

Fixed Costs

Fixed costs remain unchanged, even as the level of resource usage varies. This includes any costs that are negotiated prior to the initiation of the service, such as maintenance contracts for hardware components.

Even if no business occurs, it still costs money to keep the business going. This is the fixed cost.

Variable Costs

Variable costs change over time in proportion to the resource usage. For example, the operation of the service desk could be a variable cost. As usage of the service desk increases, so might the cost to the customer. For example, an SLA may be established with the accounting department that specifies a flat rate of $1,000 per month for use of the service desk for up to 1,000 calls, which would be a fixed cost. Any additional calls are charged at $.75 per call. If the desk receives less than 1,000 calls, the fixed cost is reduced by $.50 for each call that was not used. Therefore, if more or less than 1,000 calls are made, the total amount charged to the customer varies depending on the total number received from that customer. These costs are then referred to as variable costs.

Cost Categorization

When assigning costs to customers, the financial manager must begin by identifying and categorizing the costs to be collected. Categorization allows the financial manager to provide a detailed

explanation of the costs that are charged to customers. Costs are assigned to cost elements, which are also budgeted items, and then allocated to customers. Examples of cost elements include:

- Hardware
- Software
- Management
- Communication
- Support
- Change and implementation
- Personnel
- Miscellaneous

Each of these elements can be further divided into subcategories that allow for more precise cost allocation. The following table provides an example of typical cost elements for each of the main categories:

Table 1. Cost Elements and Sub-Elements

Cost elements	Sub-elements
Hardware	• Servers • Hubs • Routers • Cabling • Printers • Communication devices • Maintenance
Software	• Applications purchases • License fees • Maintenance and tuning of operating systems
Management	• Disaster recover planning and testing • Backup/recovery and storage • Maintaining and tuning networks
Communication	• Line fees • Wide area network fees

Support	• Support staff • Training • Resources used for research and correction
Change and implementation	• Development and testing of applications • Testing • Planning • Implementation • Version control • Upgrades and add-ons • Training • Review • Fixing software bugs
Personnel	• Staff costs • Training
Miscellaneous	• Downtime • Shadow costs • Utilities • Facility maintenance • Hardware for support tools

Cost Units

Cost units are used to collect indirect costs and then allocate the costs to customers. Examples of cost units include:

- CPU seconds
- Number of licenses
- Number of personal computers/keyboards
- Number of personnel
- Staff time or numbers
- File storage
- Transmitted network packages
- Bandwidth consumption
- Number of batches run

For example, the IT department decides to charge for after-hours customer support based on staff time. The number of staff hours would be multiplied by a staff rate to obtain the total amount charged to customers. In this case, the staff hours would be the cost unit.

Cost units can also be percentages that are applied to indirect costs to determine the amount of the total cost that applies to a particular customer. Examples are:

- Personal computer ratio = Number of customer personal computers/Total number of personal computers using the hardware or software
- CPU usage = Amount of customer CPU time/Total CPU time
- License ratio = Number of customer license/Total number of licenses

Depreciation

Depreciation is the task of allocating the cost of fixed or capital assets minus the salvage value over the estimated useful life of the asset. The three components used to determine depreciation are: procurement cost, salvage value, and useful life. The procurement cost is the initial purchase price of the asset and the salvage value is the value of the asset at the end of its useful life. The useful life is number of years that the asset provides value to the organization. For example, consider a server used solely by the accounting department. It is depreciated at a rate of $1,000 per period over a useful life of four years. The accounting department would be charged the entire depreciated amount of $1,000 for using this asset.

Straight-Line Depreciation

The straight-line depreciation method depreciates the value of the asset less its salvage value over equal amounts during its estimated useful life. Depreciation is the procurement cost minus the salvage value, divided by the estimated years of useful life.

The following example shows the calculation of depreciation for a server:

Server procurement cost: $4,500
Estimate useful life: 4 years
Salvage value: $500

The annual depreciation = ($4,500 – $500)/4 years = $1,000 per year.

Thus, the server depreciates over a four-year period at a rate of $1,000 per year. At the end of its useful life, the server is typically replaced.

Usage

The usage depreciation method depreciates the asset based on the amount of usage, such as CPU seconds, during a period. Any measure that defines the amount of time that the asset provides useful service to the organization during a defined period may be used to determine the usage depreciation. When calculating the usage depreciation, the financial manager must first determine

the depreciation rate that is applied to the usage factor. Calculate the depreciation rate by subtracting the salvage value from the procurement cost and dividing the result by the estimated useful life. The depreciation is calculated by multiplying the depreciation rate by the usage amount for the period.

The following example describes the usage depreciation calculation.

Server procurement cost: $4,500
Estimate useful life: 10,000 hours
Salvage value: $500

The annual depreciation rate = ($4,500 – $500)/10,000 hours = $0.4 per hour.

If the server operates for 3,200 hours for the fiscal period, then the deprecation expense = 3,200 hours x $0.40 per hour = $1,280 for the fiscal period.

Cost Accounting Methods

Objectives of any costing system:

- Identify the cost elements.
- Assign the direct costs.
- Identify the indirect costs and select an allocation method.

Cost-by-Customer Accounting Method

The cost-by-customer accounting method assigns capital and operational costs to customers. All costs related to the services provided to a specific customer are identified by cost elements. The direct costs are relatively easy to identify and allocate to the correct customer. The indirect costs, however, are much more difficult to allocate. For the allocation of indirect costs, a fair and equitable distribution scheme must be developed that is acceptable to customers. Depending on the type of costs, different allocation schemes can be used for cost allocation:

- For software and hardware, apportion the costs by the number of personal computers or keyboards that the customer owns.
- For hardware and software, apportion costs according to the CPU time utilized.
- For software costs, apportion the costs by the number of licenses the customer has been assigned.
- Group the costs and distribute them evenly across the organization. This is a useful technique for costs that are difficult to apportion, such as routers, hubs, Web servers, cabling, and so on (that is, infrastructure costs).

An example of the cost-by-customer allocation method is shown in the following table. Direct costs are allocated directly to the customer who solely uses a particular service. Indirect costs are allocated according to the schemes shown in the table. In this example, infrastructure costs were allocated at a 64 percent/36 percent split between the accounting and finance departments respectively. These percentages approximate the percentages of the total services being used by each customer. The overhead costs were divided equally between customers. Note that these allocation methods are only examples of how the costs can be allocated. Each organization develops its own allocation schemes based on executive input and customer negotiations.

Table 2. Cost-by-Customer Cost Accounting Method

Cost elements	Capital	Annualized cost	Direct	Allocation method	Accounting department	Finance department
Hardware						
NT Servers (2)	Yes	$10,000	Yes		$10,000	
NT Servers (2)	Yes	$10,000	No	50/50 split	$5,000	$5,000
Netware Server	Yes	$2,000	No	Infrastructure		
PCs (40)	Yes	$40,000	No	By PC	$30,000	$10,000
Routers (10)	Yes	$20,000	No	Infrastructure		
Hubs (50)	Yes	$2,500	No	Infrastructure		
Cabling	Yes	$20,000	No	Infrastructure		
Software						
Windows 2000 Server (10)	No	$10,000	No	By license	$6,000	$4,000
Windows 2000 Professional (100)	No	$25,000	No	By PC	$18,000	$7,000
MS Office (50)	No	$8,000	No	By license	$5,000	$3,000
Accounting Application	Yes	$15,000	Yes		$15,000	
Finance Application	Yes	$18,000	Yes			$18,000
Communications						
WAN fees	No	$100,000		Infrastructure		
Personnel						
Management	No	$300,000		Overhead		
Support	No	$175,000		Overhead		
Maintenance	No	$200,000		Overhead		
Miscellaneous						
Utilities	No	$50,000		Overhead		
Facility Maintenance	No	$75,000		Overhead		
Support Tools	No	$15,000		Overhead		
Total costs		$1,095,500				
Infrastructure costs		$144,500		64% / 36%	$92,480	$52,020
Overhead costs		$815,000		50% / 50%	$407,500	$407,500
Totals					$588,980	$506,520

Cost-by-Service Accounting Method

The cost-by-service technique assigns capital and operational costs directly to individual services. As with the cost-by-customer technique, all costs are related to individual services using cost elements. Direct costs are allocated directly to the service and indirect costs are allocated using cost units. An example of the cost-by-service method is shown in the following table. In this example, the IT department provides a service to the organization's accounting department by making available a specific accounting application. All costs for the use, maintenance, and support of this application must be accounted for.

The direct costs are applied in their entirety to the service provided. The indirect cost is allocated using the cost units shown in Table 5. For example, there is a total of 50 Microsoft Office licenses and each license has a cost per unit value of $160. The accounting department uses five of these licenses for a total cost of $800. Infrastructure and overhead costs can be allocated using any method the finance manager selects. In this example, a percentage was selected based on the approximate IT resources that the accounting services might consume with regards to the total IT service output. This is not necessarily the correct method nor is it the only method available; it is simply an example of how the costs can be allocated.

Table 3. Cost-by-Service Accounting Method

Cost elements	Capital	Annual cost	Direct	Cost unit	Total capacity	Cost per cost unit	Usage	Total cost
Hardware								
NT Servers (2)	Yes	$10,000	Yes	N/A				$10,000
NT Servers (2)	Yes	$10,000	No	CPU % use	100%	$10,000	25%	$2,500
Netware Server	Yes	$2,000	No	Infrastructure				
PCs (10)	Yes	$40,000	No	By PC	40	$1,000	10	$10,000
Routers (10)	Yes	$20,000	No	Infrastructure				
Hubs (50)	Yes	$2,500	No	Infrastructure				
Cabling	Yes	$20,000	No	Infrastructure				
Software								
Windows 2000 Server	No	$10,000	No	By license	10	$1,000	2	$2,000

(2)								
Windows 2000 Professional (10)	No	$25,000	No	By PC	100	$250	10	$2,500
MS Office (5)	No	$8,000	No	By license	50	$160	5	$800
Accounting application	Yes	$15,000	Yes	Users	10	$1,500	10	$15,000
Finance application	Yes	$18,000	Yes	Users	10	$1,800	0	
Communications								
WAN fees	No	$100,000		Infrastructure				
Personnel								
Management	No	$300,000		Overhead				
Support	No	$175,000		Overhead				
Maintenance	No	$200,000		Overhead				
Miscellaneous								
Utilities	No	$50,000		Overhead				
Facility maintenance	No	$75,000		Overhead				
Support tools	No	$15,000		Overhead				
Total Costs		$1,095,500						
Infrastructure costs		$144,500		10%				$14,450
Overhead costs		$815,000		5%				$40,750
Total								$98,000

Activity-based Costing

Activity-based costing (ABC) seeks to allocate indirect costs to specific services that are provided to customers. The indirect costs can account for a significant portion of the costs that are charged to customers. If these costs can be subdivided into additional cost elements and then allocated to various services that are provided to customers, a more accurate cost for the services provided can be realized. As a very simple example, three IT services are considered: accounting application services, financial application services, and human resources application services. The following table shows the distribution of costs using the cost-by-service method. In this example, the fixed and variable overhead costs are allocated according to the CPU-seconds used by each customer. The percentages are:

Accounting Department: 55%
Finance Department: 35%
Human Resources Department: 10%

Table 4. Cost-by-Service Cost Allocation

Cost elements	Total cost	Direct	Accounting	Finance	Human Resources
Software					
Accounting software	$35,000	Yes	$35,000		
Financial software	$15,000	Yes		$15,000	
Human Resources software	$20,000	Yes			$20,000
Hardware					
Servers (1 each)	$12,000	Yes	$4,000	$4,000	$4,000
Overhead					
Fixed	$30,000	No	$16,500	$10,500	$3,000
Variable	$75,000	No	$41,250	$26,250	$7,500
Totals	**$187,000**		**$96,750**	**$55,750**	**$34,500**

With activity-based costing, as many of the variable overhead costs as possible are assigned to cost elements and then allocated to one of the three services being provided. The financial manager should attempt to assign as many variable costs as possible, but is only able to do so if appropriate allocation schemes can be developed.

The following table shows an example allocation of the variable costs based on the approximate percentage of cost elements consumed.

Note Any method can be used to allocate these costs. The objective is to allocate costs as fairly as possible.

Table 5. Allocation of Variable Costs Using Activity-based Costing

Cost elements	Total cost	Direct	Accounting	Finance	Human Resources
Variable costs					
Support costs	$35,000	Yes	50%	$17,500	35%
Training	$12,000	Yes	35%	$4,200	55%
Maintenance	$10,000	Yes	40%	$4,000	20%
Upgrades	$8,000		65%	$5,200	30%
Totals	$65,000			$30,900	

Using ABC, $65,000 of the $75,000 in variable costs is more accurately allocated to individual services based on the cost

elements identified. The remaining $10,000 in variable costs is allocated to each customer according to the original method of CPU-seconds used. The following table shows the revised costs for each customer.

Table 6. Revised Cost-by-Service Cost Allocation Using Activity-based Costing

Cost elements	Total cost	Direct	Accounting	Finance	Human Resources
Software					
Accounting software	$35,000	Yes	$35,000		
Financial software	$15,000	Yes		$15,000	
Human Resources software	$20,000	Yes			$20,000
Hardware					
Servers (1 each)	$12,000	Yes	$4,000	$4,000	$4,000
Overhead					
Fixed	$30,000	No	$16,500	$10,500	$3,000
Variable (ABC allocation)	$65,000	No	$30,900	$23,250	$10,850
Variable (CPU usage allocation)	$10,000	No	$5,500	$3,500	$1,000
Totals	$187,000		$91,900	$56,250	$38,850

As shown in the table above, using the ABC allocation method results in a redistribution of the variable costs that, in turn, changes the total cost charged to each customer. As it turns out, the accounting department was being overcharged $4,850 for the services being provided and the human resources department was being undercharged. From this example, it is apparent that the ABC system of cost allocation, if used correctly, can provide a much more accurate and fair cost distribution. The only real disadvantage of using this method is the increased time required to identify and assign overhead costs. The financial manager must determine if it is cost effective to provide more accurate prices to customers.

Request for Change Review and Approval

The financial manager is responsible for ensuring that actual costs during the budgeted period conform to the budget costs. An important activity in accomplishing this task involves the review and approval of requests for change (RFCs). For more information, see the MOF change management operations guide. The finance manager needs to review all RFCs that are received

by the change manager to ensure that the request was budgeted for or that there are enough funds available in the budget to implement the RFC. When assessing RFCs, the financial manager requires information from various SMF managers concerning the resources and associated costs that are required to plan, develop, test, and implement the change. If the funds are available, the RFC is approved and returned to the change manager. If the funds are not available, the RFC is rejected unless the change initiator, the individual who submits the change, is able to procure the necessary funding.

Project Investment Appraisals

Investment decisions are never easy to make. The more expensive the investment, the more scrutinized the decision. When making investment decisions, IT managers must evaluate each investment to determine if it is worthwhile to the organization. In many cases, multiple alternatives are available. In these situations each project must be evaluated and compared to the other projects by using some type of metric. Organizations typically examine a project on the basis of its financial return to the company. Methods that are typically employed include the net present value (NPV), payback period, and return on investment (ROI).

No one method is the best method to use nor is one better than the others. Each method measures slightly different variables and all could be used to help determine which project to select. The financial departments of each individual organization will typically have some preferred methods they use to assess projects. IT appraisal methods should be developed with the assistance of the enterprise financial department and be approved by the CFO, especially in cases where the IT department receives funding for capital projects from the CFO.

When using investment appraisal methods, it is extremely important to understand that they should not be solely relied upon to make investment decisions. Other measures should be considered in order to have a complete picture of the advantages and disadvantages of making a particular investment. For example, the financial measures will not take into account whether a project that is intended to reduce the number of support personnel actually accomplishes its intended goal. They also do not stipulate how a user's job is affected by a specific investment. The IT manager must also consider what additional resources are required to support the project, such as personnel (including their training requirements) and the life cycle costs associated with the asset. In other words, IT managers must

consider many components in addition to financial measures and evaluate how each of them factors into the decision.

The following appraisal methods can help with the decision-making process. They should be considered a starting point for the decision-making activity. If time permits, it may be useful to evaluate the investment using all three methods, in addition to collecting other applicable information.

One thing to keep in mind when making investment decisions is that sunk costs (that is, costs already incurred that cannot be recovered regardless of future events) should not be factored into the decision. For example, suppose an IT manager is considering purchasing a new system that significantly reduces the operating costs that are realized with the existing system, which was purchased recently.

The following information applies:

System A

Initial cost:	$20,000
Operating cost (existing system):	$8,000
Salvage value:	$5,000
Useful life:	5 years

System B

Initial cost:	$30,000
Operating cost:	$1,500
Useful life:	5 years

Table 7. Evaluation of System Life Cycle Costs

Costs	System A	System B	Difference
Initial cost	$0	$30,000	$30,000
Depreciation	$15,000	$15,000	$0
Operating costs (5 years)	$40,000	$7,500	($32,500)
Salvage value	$0	($5,000)	($5,000)
Total costs	$55,000	$47,500	($7,500)

In this simple example, the information in the table above is a comparison of the life cycle costs for each system. Note that the initial cost of System A is not included because that cost is considered to be a sunk cost. With either system, System A's depreciation must be included. The operating costs are total amounts for the five-year useful life of each system and, if sold, the salvage value of System A is credited towards the purchase of System B. If System B was to be purchased, the result would be a $7,500 reduction in the total life cycle costs. The point of this exercise is to ensure that managers understand that sunk costs

should not be factored into investment decisions. Sunk costs cannot be recovered, so only the future costs should be examined when making investment decisions.

Net Present Value

The net present value (NPV) method evaluates the present value of cash flows that result from the investment less the initial outlay. To determine the present value, the cash inflows and outflows are discounted to the present time using a discount rate with the following formula:

Present Value = (Future Value) / $(1+\text{Discount Rate})^{n}$

The present value of money is what money in the future is worth today. The future value is what the money is worth at some point in time. The discount rate is the rate of return that would likely be obtained if the money were invested today and not invested in the project. In this context it is also referred to as the cost of capital.

The rate that is used must be agreed upon since it is a very subjective variable in the equation and greatly affects the results. A good starting point is to determine what rate lending institutions would charge the organization for loans. However, consideration must be given to investment risk and the benefits that result from the investment.

The variable "n" is a period of time. For example, n = 3 represents three periods in the future. For simplicity, "n" is the number of years, but it may be any measure of time. The equation must be used to determine the present value of the expected cash flows or economic benefits provided by the project from each period during the estimated life of the asset. In other words, if a new asset is expected to provide economic benefits for five years, a present value must be calculated for each year. To help with this explanation, an example is provided:

The IT department is evaluating two projects. Both Project A and Project B require an initial investment of $1,000. Both investments are also expected to return $1,500 over the next four years with Project A receiving most of the return in the first couple of years and Project B in the latter years. Calculating the NPV for each investment yields the figures in the following table.

Table 8. Net Present Value Calculations

Project	Present	Year 1	Year 2	Year 3	Year 4	Total NPV
Project A	($1,000)	$1,000	$200	$200	$100	
		$909.10	$165.29	$150.26	$68.30	**$292.95**
Project B	($1,000)	$200	$300	$500	$500	
		$181.82	$247.93	$375.66	$341.51	**$146.92**

The table above shows the NPV results for each project. To determine the NPV of the year 2 cash flow for Project A, the present value equation would be applied as follows (assuming a discount of 10 percent):

Present Value = ($200) / $(1+0.1)^2$ = $165.29

To determine the NPV of each project, the future cash flows are added and the initial investment is subtracted. As a rule of thumb, investments yielding a positive NPV are generally accepted. When more than one project is being evaluated, the project with the greater NPV is, by financial evaluation, the best investment to select. In other words, all other things being equal, Project A would be selected over Project B as it is expected that Project A yields a $146.03 ($292.95 – $146.92) greater return over the four-year period. From the example, it is apparent that the earlier that returns are realized the greater the NPV is. Therefore, investments that yield greater returns in earlier years produce better NPVs than investments that do not produce returns until later in the life of the asset.

Payback Period

Payback period is another method for comparing alternative investments. Payback period measures the amount of time that it takes to repay the initial investment of an asset. The payback method is the initial investment cost divided by the anticipated annual savings or resulting increased revenue. For example, an investment of $1,000 with an estimated annual cost savings of $400 yields a payback period of 2.5 years, meaning that it would take 2.5 years to recoup the costs of the initial investment. In general, investments with payback periods of less then three years are considered to be good investments. However, each organization undoubtedly has its own guidelines that must be followed when assessing payback periods.

When two or more investments are being assessed, the investment that yields the quickest payback would, all other things being equal, be the best to select. The biggest problem

with the payback period method is that it does not account for the time value of money.

It is generally accepted that the shorter the amount of time to recoup the costs of an investment, the less risky the investment is to the organization. However, for more risky investments, the payback period should take into account the asset's salvage value, as this value changes with the age of the asset. Thus, if an asset has a higher salvage value, it may be the less risky investment as the initial costs can be recouped faster if that asset is sold. For example, consider two assets A and B with the following characteristics:

System A

Initial cost: $20,000

Annual cost savings: $4,000

Useful life: 5 years

Salvage value yr. 1: $15,000

Salvage value yr. 2: $13,000

Salvage value yr. 3: $10,000

Salvage value yr. 4: $7,000

Salvage value yr. 5: $4,000

System B

Initial cost: $28,000

Annual cost savings: $8,000

Useful life: 5 years

Salvage value yr. 1: $16,000

Salvage value yr. 2: $12,000

Salvage value yr. 3: $8,000

Salvage value yr. 4: $4,000

Salvage value yr. 5: $500

Table 9. Payback Period Assessment

Year	System A			System B		
	Cost savings	Salvage value	Total return	Cost savings	Salvage value	Total return
1	$4,000	$15,000	**$19,000**	$8,000	$16,000	**$24,000**
2	$8,000	$13,000	**$21,000**	$16,000	$12,000	**$28,000**
3	$12,000	$10,000	**$22,000**	$24,000	$8,000	**$32,000**
4	$16,000	$7,000	**$23,000**	$32,000	$4,000	**$36,000**

When assessing the risk of an investment, the salvage value of the asset should be taken into account. With the traditional payback method, System B would appear to be the better investment as the payback period is less than four years versus a payback period of five years for System A. However, the asset purchased for System A retains a greater resale value then System B. Examining the total return cells in the previous table, each of which is the sum of the cost savings (which accumulates each period) and asset salvage value, shows that it takes less than two years to recover the initial cost of System A. For System B, it would take approximately 2.5 years. Therefore, System A would repay its investment more quickly when taking into consideration the salvage value and would be the less risky investment option.

Return on Investment

Return on investment (ROI) is a measure of financial performance. ROI is useful because it forces managers to examine cost savings and is a useful method to compare alternative investments. In terms of general accounting, ROI is typically measured as the turnover multiplied by the earning ratio:

ROI = Turnover x Earning ratio

= (Sales/capital employed) x (net income/sales)

When using ROI to determine whether to invest in IT assets, this formula needs to be modified, as the earning ratio is not easily quantified when applying this method to assess IT investments. It is more useful to look at the amount of money that is saved resulting from an investment. Therefore, the equation is reduced to the savings divided by the initial outlay. Factors that could be assessed include the amount saved resulting from:

- Lower maintenance costs
- Lower service costs
- Less required training
- User time saved using the new asset

These are just some cost savings that could be realized. Each cost savings has to be estimated based on input from IT managers and the affected departments. An exact figure is not important; however, a close and reasonable approximation is important to accurately assess the value of the project.

For example, the IT department has decided to purchase one of a couple different IT management applications. Each of the applications serves a slightly different purpose and results in differing cost savings for the IT organizations. The costs of the

applications vary. Using an ROI analysis, the financial manager can assess which investment will result in the best value for the department. The manager must first collect enough information from affected parties to determine what the approximate cost saving for each application is. Applying this information might yield:

System A

Cost: $20,000

Savings: $4,500

ROI : $4,500 / $20,000 = 23%

System B

Cost: $16, 000

Savings: $2,750

ROI: $2,750 / $16,000 = 17%

According to the ROI analysis, System A will result in a higher ROI or greater overall cost savings. If all other factors are equal, it would be better to select System A.

Total Cost of Ownership

The total cost of ownership (TCO) is defined as the total cost of an item over its useful lifetime. TCO analysis attempts to include all of the direct and indirect costs. TCO includes not only the purchase price, but also implementation and training costs, management costs, and support costs. Costs included in TCO fall into the following categories:

- Purchase price
- Training costs
- Application costs
- Support and maintenance costs
- Environmental change costs
- Contracted technical support costs

Purchasing includes the costs incurred in evaluating hardware in the network environment, selecting the unit, costs incurred by the purchasing department, and delivery costs. When viewed from this perspective, it is much more cost effective to purchase equipment from a list of standard configurations.

Every personal computer user requires some form of training at least several times a year. The more change in the IT environment, the more time spent in training.

TCO support and maintenance costs include the support function and the service desk. The costs also include the informal system

of personal computer experts in the organization. Reducing the number of applications and supported hardware configurations greatly reduces the TCO in the organization.

Based on a review of the studies available, keys to lowering the TCO are to:

- Simplify the acquisition process.
- Develop and maintain standard hardware configurations.
- Select "soft" standards and negotiate enterprise licensing.
- Systematically retire legacy equipment and software.
- Establish a streamlined procurement process and use volume purchasing and site licenses to establish attractive prices on standardized hardware and software. This strategy reduces the complexity of the IT environment. It encourages customers to voluntarily retire their old equipment and to select tested hardware and software, dramatically reducing TCO.

These techniques are discussed in greater detail in the configuration management, change management, and service desk management functions as described in ITIL and MOF operations guides.

Total Cost of Ownership Studies

There are many studies available that document TCO studies. Several factors should be taken into account before applying the findings to an organization.

- Planning and deployment is more expensive in a more complex organization.
- The more undefined processes will have higher TCO.
- A more complex IT environment typically leads to a higher TCO.
- TCO does not estimate the benefits resulting from the IT products or services being provided.
- Direct budgeted costs include hardware and software, management, support, development, and communications fees.
- Indirect unbudgeted costs include end users supporting themselves and downtime.
- TCO calculations should take into consideration the type of customers. Data entry requires a different computer than an engineer.

The Gartner Group white papers list charts of accounts that can assist IT managers in comparing their organizations' TCO with published TCO studies.

Users can be classified as:

- High performance
- Mobile
- Knowledge
- Structured task
- Data entry
- Additional functionality adds complexity, which increases TCO
- TCO best practices
- Introduce soft standards
- Use technology where feasible
- Provide train-the-trainer training for each organization's expert on personal computers

Shortcomings of Total Cost of Ownership

Unfortunately, many organizations have come to focus on TCO and neglect other important factors that must be considered in making a decision, such as support quality and user needs. TCO is just one part on the equation; when making decisions, estimated benefits should also be taken into account.

- TCO does not address the concept of risk.
- TCO does not address benefits.
- TCO is hard to quantify.
- TCO decisions should consider the risk of implementation.

Real Cost of Ownership (RCO)

TCO can be divided into two components: direct (real) costs and indirect costs. The direct (real) costs are usually incurred by the IT organization. The user's organization usually incurs the indirect costs.

Shadow support and other indirect costs are, at least in part, a result of the user's perception of service desk shortcomings. Users have been trained not to look to the service desk for support. Some organizations have even taken to calling this discouragement "demand management."

TCO attempts to quantify both direct and indirect costs. Providing better, more responsive support minimizes shadow support costs. Other methods can be used to measure shadow support; surveys are one method.

Organizations attempting to measure and manage TCO run into two problems:

- The intangible costs in TCO are difficult to measure.
- Costs incurred by other organizations are hard for the IT department to control.

Measurement

TCO includes intangibles such as shadow support. Often these intangibles comprise the majority of TCO.

IT organizations often find themselves unable to quantify these intangibles without a great deal of effort. However, there are industry studies that have published factors that estimate indirect costs and assist in generating a TCO figure.

The TCO number generated may be useful in comparing an organization's TCO to the industry average.

Management

If the TCO calculations use an approximation, the TCO number generated may be informative, but not useful in managing indirect costs. Simply using a factor from some study does not allow one to manage the indirect costs or measure improvements in indirect costs.

Direct costs (measured) x indirect cost factor = TCO

Since direct costs are more easily managed and are under the control of the IT organization, it makes more sense to manage the direct (real) costs directly.

While it is important to recognize the indirect costs, it is difficult for the IT organization to make changes in other organizations. It is easier to focus first on IT costs incurred in delivering the LAN/desktop environment and support services.

Understanding real IT costs aids in both improving efficiency and objectively evaluating outsourcing options. Understanding the real cost of ownership (RCO) also helps IT organizations set a price for LAN/desktop services.

IT organizations unable to quantify their real costs are easy targets for cost-based attacks from outsourcers who market their services by using cost of ownership consulting practices.

Managerial Reports

Managerial reports include detailed and summary budgets, service level agreements, and project investment appraisals.

Small Organizations

In order to calculate taxes, small companies already generate balance sheets and profit and loss statements. The accounting

information needed for reports has already been collected; it is just not in the right format or in logical accounts. Work with the company's accountant or with the company's accounting software to collect IT costs as separate line items:

- The profit and loss statement lists costs.
- Computer resources are listed in depreciation lists.
- Year-by-year comparisons of IT expenses can be made from this information.

Mid-Size to Large Organizations

Accounts and the accounting system are already in place. Work with the company's finance department to align accounts with business operations. Ask for information and reports; do not hesitate to ask questions if the reports are confusing. Establish a schedule to receive reports (often these reports are already being generated).

Outsourcing

This discussion would not be complete without mentioning the topic of outsourcing. Outsourcing services to vendors can be a very useful way to manage the IT activities of an organization. Some organizations see outsourcing as the cure for all of their problems, while others disdain the prospect of being dependent on external resources over which they have little control. This section is presented simply to remind IT managers that they should consider outsourcing as an option.

Depending on the needs of the organization, vendors can be contracted to provide a range of services. Some organizations find it cost efficient to outsource some IT activities, while other organizations may be better-suited to outsource the entire operation of its IT department. When considering outsourcing decisions, the IT manager must consider more than just the financial aspects. Advantages and disadvantages that should be weighed include:

Advantages of Outsourcing

Provides services at a more stable price level.

- Permits the organization to focus on core competencies.
- Eliminates the need to purchase IT assets.
- Eliminates payroll costs and the problem of hiring and retaining employees.
- Can improve an IT resource that is not working effectively.
- Increased vendor competition results in flexible contracts and payment schemes, reduced costs, and better services.

Disadvantages of Outsourcing

- Loss of control.
- Conform to the vendor's way of doing things.
- Locked into contracts.
- Dependent on external resources.
- Loss of in-house expertise.
- Possible loss of internal career paths.

These are just some of the factors that managers must evaluate when determining whether to outsource. From a financial perspective, outsourcing can save an organization a great deal of time and money. Not only does the organization not have to spend money purchasing, maintaining, and upgrading assets, but also it does not have to pay the ever-increasing salaries of IT employees whose function is outsourced. More importantly, the organization is free from the cost of hiring and trying to retain IT employees in a field that is severely undermanned.

Examine any outsourcing proposals carefully. It is very difficult for outsourcing to come out cheaper as economies of scale often do not offset the other expenses. Desktop outsourcers have to tack on 22–28 percent (G&A, sales and marketing, profit). Add to this a 3–7 percent management cost, and outsourcing may not be cost effective.

There are times, however, where outsourcing makes sense. One example is supplying LAN/desktop services in small, remote field offices. Another good example is when IT is head-count constrained or has new projects that demand attention.

Managers must also weigh the loss of direct control of IT resources. These are very important disadvantages, especially if an organization is in a state of constant change. Can the vendor meet the changing needs and requirements of the customer? Can the vendor adequately and quickly scale to meet the expanding needs of the customer? Is the vendor willing to work with the customer and to understand the customer's business model, thus providing unparalleled service for the customer? These are just some of the questions that should be addressed when deciding to outsource.

Managing the Outsourcing Vendor

How does one manage the outsourcing vendor? First, create SLAs that create a clear set of expectations. The SLA must be clear and very explicit, even more so now that the company is dealing with an outside company. The SLA must detail responsibilities, costs, licensing, intellectual property, and a dispute resolution mechanism.

Second, provide financial incentives for good performance and service-level credits for less than satisfactory performance. Develop financial incentives to reward performance. Canceling a contract is expensive.

Third, dedicate management resources to actually manage the project. Just because something is outsourced does not mean it is not important. If the managers of a business do not think something is important, the vendors will realize this and act accordingly.

Budgeting

A budget is a detailed plan that specifies how resources are acquired and used over a specified period. Budgeting is the activity of predicting how much money the organization will spend during a specified period. It also involves controlling the distribution of money to areas for which it was originally budgeted, thereby ensuring that sufficient funds are available throughout the entire period. Budgeting allows organizations to plan for routine operational costs as well as significant expenses, such as purchasing a new group of servers or storage devices.

When developing a budget, management must assess the department's goals and objectives based on input from a variety of sources. In order to meet the budget, a plan for attaining the goals and objectives must be developed. So, in a real sense, the budgeting process helps management focus its direction and priorities.

IT financial managers should develop two separate budgets: an operational budget and a capital budget. An operational budget plans for the costs associated with operating and maintaining the IT environment over a specified period (usually corresponding to the organization's fiscal year). The capital budget is typically a longer-range budget (three to five years) that plans expenses for capital assets such as servers and networks. Executive management or the organizational budget committee must review and approve all departmental budgets.

It is the responsibility of the financial manager to prepare IT budgets. Inputs are required from all departments within the organization that use IT services, as well as from all SMF managers. The financial manager should specify the process that is used and the information that is required from each department and SMF manager. In a small organization, the process may be very informal. However, in larger enterprises, the financial manager should provide each manager with guidelines specifying the information required, when it is required, and what medium should be used to submit the information. It may

be helpful to prepare and distribute a budget manual to each departmental manager to assist them in determining their department's IT resource requirements. The manual facilitates the negotiation of SLAs and the development of the IT budget. A manual could also be distributed to the SMF managers to guide them through the budget-planning activity. Sufficient time should be given to each manager to collect and submit the information (such as one month). For larger organizations this process could take three or four months or more to complete. This also gives the financial manager sufficient time to coordinate the collection of the necessary departmental and SMF information needed to develop the budget plan.

Some of the things that must be considered when developing a budget include:

Prior period trends. Examine trends of service levels over past budget periods to approximate future requirements.

Service level agreements (SLAs) with each organizational group. SLAs specify the service levels that are provided to customers as well as the costs for providing those services.

IT organizational requirements such as personnel training and system upgrades. Significant IT environment changes may require significant resources, which must be planned for in advance.

Organizational changes. For example, if a department is outsourced, then the IT department would no longer be required to provide these services. Or the enterprise may be in an expansion phase, requiring greater IT services.

Industry and economic trends. Examine how trends in the industry or general economic trends will affect the need for IT services.

Special requirements such as developing "in-house" applications. Depending on the scope of the applications being developed, significant resources may be required.

Customer satisfaction. The financial manager can also use surveys to determine how the services from the prior budget period were performed. Customer satisfaction surveys help to determine if the correct level of service is being provided, especially in regards to the operation of the service desk.

Budgeting Benefits

The benefits of budgeting include:

- Budgeting serves as a planning tool for the operation of the IT organization. It forces all groups within the IT group to plan their activities for the budget period.
- Budgeting ensures that sufficient funds are available through the budget period to operate the IT organization.
- Budgeting educates the workforce about the cost of their services. Sharing budgeting information with the workforce motivates the workforce to achieve specific budgeted goals.
- Budgeting encourages IT managers to examine alternative configurations and services that could reduce costs and/or improve services.
- Capital budgeting forces IT managers to think about long-term plans.
- A budget acts as a baseline that can be used to assess actual costs during the budgeted period. This provides a guide to assess whether the IT department is over or under budget at the end of the period and allows the financial manager to plan accordingly.
- Budgeting serves as a tool to assess the operational effectiveness of each IT group from a financial perspective.

Budget Inputs

The development of an IT departmental budget requires input from a variety of sources, including—but not limited to—upper management, customers, and historical cost data.

As part of the SLA negotiation process, prices must be established for all services provided. Inputs must be garnered from SMF managers so that accurate prices can be negotiated. The financial manager should also examine trends from previous budget periods. Internal budgeting inputs and trends are used as inputs for the negotiation process where final prices are set from which the budget is developed.

Service Level Agreements

Cost Implications of the Service Level Agreement

One of the most important budget inputs is the SLA. Service level agreements answer the question "What have I promised to do?" The matching cost data answers the other half of the question "How much does it cost to do what I've promised?"

Financial management is responsible for providing input for the costs of services included in the SLA. In order to recover all operating costs from customers (or realize a profit if the IT department is a profit center), the IT manager who negotiates an SLA agreement must have a complete understanding of the costs.

This requires cost information from each SMF manager. With this information, the financial manager can assist in determining what it will cost in the future to fulfill the obligations in the SLA.

Negotiation of Service Level Agreements

Accurate cost data provides a solid basis for negotiation. SLAs and historical cost data can provide parties to the negotiation with an accurate picture of what services were provided and at what cost. Without a complete understanding of the costs of providing services, IT managers are unable to negotiate agreements that are fair to each customer and still completely recover the costs of operating the IT environment.

The negotiation process involves not only the negotiation of service levels, but also the setting of prices for the services provided, so that they can be appropriately budgeted for. Part of this activity involves the review of existing SLAs to verify that they are still needed and that the services being provided sufficiently meet customer demands. As part of this evaluation, customers should be prepared to provide input regarding their strategies and goals for the upcoming year. Based on this information, SLAs are revised as needed to more accurately reflect the service requirements of each group. Only then can accurate prices be set for these services.

Negotiating has some pitfalls: the process can be time consuming, and it causes managers to look only at what is best for their particular divisions and neglect what is mutually best for the organization. These two issues must be addressed when preparing to negotiate service prices. It is useful if executive management addresses these issues and provides guidance on the procedures to be used in the negotiation process. Whatever technique is used to set prices and whatever agreements are reached, they must be supported by executive management since they may need to act as the arbitrator if disputes cannot be settled.

Customer Requirements

In addition to the negotiation of SLAs, each customer should provide information about future IT service requirements, thus providing input for the IT capital budget. For example, if an organization's accounting department is planning on purchasing a new software accounting package, the IT department may need to make modifications to existing system architecture (that is,

new servers) to support this software. Knowing this information well in advance gives the IT department time to plan for expenses related to system upgrades, service desk support, and so on.

Internal Cost Inputs

When setting customer service costs, the financial manager must gather budget inputs from each SMF manager. Most of the budgetary inputs collected are the indirect costs of operating the IT environment. For example, what training is required to teach personnel how to manage user accounts and security protocols? What training is required to inform the organization about policy changes, such as changes to the request for change submittal process? What costs are incurred for managing SLAs? Each of these costs must be identified and recovered.

Trends

Not all costs are known. In order to derive a complete budget unknown costs must be estimated. Unknown costs can be estimated using previous budget trends and also by examining industry averages. Trends are historical data of similar costs from previous periods that can be used to extrapolate costs for the current budget.

When using trends to develop a budget, the financial manager must be careful not to underestimate the costs, which could lead to an insufficient amount of funds to operate the IT environment. However, it is equally unacceptable to overestimate costs, as this results in charging customers too much for the services being provided. In an organization that competes with vendors to provide services, overestimating costs can lead to the loss of service requests for the IT department.

Budget Types

Budgets types include operating budgets and capital budgets. The following sections describe the various types of budgets.

Operating Budget

Operating budgets are developed to plan for the costs incurred in operating and maintaining the IT environment. An example of an operating budget is shown in the following table. The financial manager must obtain inputs from each SMF manager in order to develop this budget. Most of the example items are self-explanatory. The miscellaneous item includes items that are not foreseen or are difficult to quantify, such as indirect direct costs like downtime. The operating budget typically outlines the costs that are incurred in the current budgeted period and the costs that are realized in the next budgeted period.

Table 10. Example of an Operating Budget

Item	Costs	Budget this year	Budget next year
Labor			
Management	$120,000	$120,000	$132,000
Support	$200,000	$200,000	$220,000
Maintenance	$150,000	$150,000	$158,000
Development	$80,000	$80,000	$93,000
Testing	$60,000	$60,000	$66,000
Consumables	$15,000	$15,000	$17,000
Training	$30,000	$30,000	$30,000
Utilities	$25,000	$25,000	$26,000
Insurance	$25,000	$25,000	$27,000
Miscellaneous	$8,000	$8,000	$8,000
Total		$713,000	$777,000

Capital Budget

Capital budgets are established for the procurement of large expenditure items such as servers and networks. These are typically long-term budgets, which plan capital expenditures for three to five years in the future. Developing the capital budget forces SMF managers to assess the existing IT environment and plan for the future needs of the organization. These budgets are developed based on the input provided by customers and SMF managers. An example capital budget is shown in Table 11. The values provided do not have to be the exact amounts that are required in future years; however, they should be good approximations so that the organization's budget committee is able to accurately assess the budgeting requirements for the entire organization.

Table 11. Example of a Capital Budget

Item	Budget this year	Budget next year	Budget in two years	Budget in three years
Web server	$4,000	$0	$8,000	$0
Software licenses	$20,000	$12,000	$4,000	$0
PC	$20,000	$6,000	$12,000	$30,000
Routers	$2,000	$0	$0	$4,000
Cabling	$5,000	$5,000	$5,000	$5,000
Total	$51,000	$23,000	$29,000	$39,000

Budgeting Methods

Several different methods are available: prior year budgeting and zero-based budgeting. Like balancing the household checkbook, the budgeting method should be consistent and repeatable.

Prior Year Budgeting

The budget process begins with a copy of the previous budget. Changes are made to the budgeted amounts based on the actual costs incurred to date. Each organizational department provides justification for increases from the prior year's budget or actual incurred costs.

Sometimes upper management provides direction to the budgeting process. This direction may come in the form of challenges or a percentage reduction. Where IT costs are charged back to internal customers, IT budgets may be dictated to be "variable to base." If the business base decreases by 10 percent, the IT budget must decrease by a similar amount.

Zero-based Budgeting

Another method of budgeting is zero-based budgeting. With this technique, the budget planning process begins with a zero balance and each activity that is funded must provide a justifiable reason for why it should be included in the budget. As part of providing budget information, each organizational department must justify its request for funds or, as part of the SLA, must justify its need for the level of service it is requesting. Zero-based budgets are built from the ground up, with all funds appropriately justified before they are included in the budget.

The major advantage of this technique is that the budget developed is not simply a reworked version of the prior period's budget. Zero-based budgeting requires that all prior period costs be evaluated before they are included in the budget. Even utility costs that may appear fixed should be reexamined and, if possible, be renegotiated. All external support costs should also be assessed and their usefulness evaluated. So, in essence, the budget planning process becomes a time to assess the overall operation of the IT environment and to evaluate where operational and financial improvements can be made. This method also ensures that the financial manager is able to justify the budgeted items to the budget committee, as all items and their costs are closely scrutinized.

Budget Review

When complete, budgets must be submitted for review and approval. When reviewing the budget, the budget committee examines the proposed expenditures based on the benefits they provide the organization. If the budget is not approved, it is

returned to the financial manger with an explanation. The budget is then reworked in accordance with the input provided by the budget committee. Occasionally, further justification for the budget may be required before it is approved.

Cost Recovery

The two keys to charging customers are to make the bills easy to understand and to tie costs to specific customer-perceived value. Costs that are not easy to understand lead to customer confusion, frustration, and distrust of the IT department. This only results in a strained relationship between the IT department and its customers. The billed costs should also be tied directly to the benefits that the customer realizes through the use of the IT services.

The amount charged back to customers is referred to as the transfer price, or the charge-back. Transfer pricing and pricing methods are discussed in the following sections. The prices that are charged to customers are typically negotiated on an annual basis as part of the SLA negotiation process. It is important to negotiate prices so that customers are not surprised by the costs of the IT services they have received. Remember, customers need time to incorporate these charges into their budgets.

Old charge-back methods relied on resource accounting mechanisms such as CPU time and disk space. These concepts typically mean very little to business users and thus only lead to confusion when prices are justified to customers by using these terms. Problems with the old methods include: customers were unable to understand the costs, there was no clear value added for the costs being charged, and it was difficult to predict costs for the fiscal period. Where possible, alternative methods should be used. Methods such as the number of batches that are run, the number of reports that are printed, or the number of accesses to the network are more understandable to customers. These are measures that the customer can easily understand and relate back to the services being provided. Pricing services based on factors that the customer has direct control over is the ideal method of pricing, although it can be a very difficult way to accurately allocate costs to appropriate customers.

If applied correctly, pricing schemes can be used to change customer behavior. For example, if the IT department has problems with bandwidth, it can establish pricing policies that reward customers for using system resources during off-peak hours. This not only helps to relieve capacity problems, but also encourages customers to think about cost-saving techniques. It may also possibly result in a proactive response whereby

customers actively seek the implementation of more cost-cutting schemes that benefit both them and the IT department.

Another example of changing customer behavior is the keyboard tax. Charging IT network overhead to customers in the form of a keyboard tax encourages managers to inventory their equipment and surplus older and under-utilized equipment. This can have a variety of impacts. Support costs may decrease as older machines and older software disappear from the organization. Implementing configuration control becomes easier. However, the tax rate may have to rise as the costs are spread over fewer machines.

Hardware budgets may increase as managers replace older equipment.

Since customers pay for IT services out of the revenue that they generate for the company, managers can be very resistant to pricing schemes that are developed by the IT department, especially if they are perceived as unfair. As a result, it can be extremely difficult to negotiate prices with customers. This may force executive managers to intervene as arbitrators of pricing disputes. Therefore, financial managers must convince executive management that it must support the cost recovery objectives and methods of the IT department.

Transfer Pricing Methods

Transfer prices are the costs that the IT department charges other internal departments for its services. When establishing transfer prices, the IT costs must be separated into cost elements and allocated to appropriate customers. As a rule of thumb, the prices should not be more than what the customer could buy the service for from an outside vendor. In other words, the price should be fair.

Transfer pricing affects the level of service that customers ask for and forces users to think about the services that they request. Before establishing transfer prices for IT services, all departments must agree on the policies to be used to establish those prices. In most cases, these policies should be coordinated with and approved by executive management. A decision needs to be made as to whether the IT department runs as a profit center or if the objective is to recover all costs without extracting a profit from the customers. This decision dictates the pricing policy that is selected for charging customers.

When setting prices the financial manager should evaluate what vendors are charging for similar services. An IT department that is charging prices that are significantly higher than what vendors are charging must be prepared to defend itself from angry

customers. The financial manager should also be prepared to provide extensive justification for the prices being charged. Fairness is an important issue when establishing service prices. If prices are not perceived as being fair, the relationship between the IT department and its customers is strained, which ultimately leads to other problems such as difficulty obtaining budget input from customers.

If the customers are permitted to use vendors for their IT service requirements, the financial manager must consider the cost of not operating systems at full capacity as a result of the customers seeking other providers. For example, would it be better to overcharge the customer and have the customer consequently hire a vendor, resulting in unfilled capacity that is not generating revenue? Or would it be better to reduce service costs to meet the customer's requirements and operate at full capacity, thereby generating as much revenue as possible? As part of the SLA negotiating activity, the finance manager must have a clear understanding of the market players and the prices they are charging for their services. This helps in the negotiation process to produce a fair price that is accepted by the customers.

A number of methods can be used to price IT services. The next sections outline several pricing methods.

At Cost

The at-cost pricing method seeks to recover all costs associated with providing IT services. The prices are typically established based on the service costs determined through the IT accounting process. Either the cost-by-customer or the cost-by-service method can be used to determine the prices that are required to recover all operating costs.

Cost Plus

Cost-plus pricing is equal to the cost of providing the service plus a markup as a percentage of the original cost. The markup is typically determined by the financial manager or set by executive management. Cost-plus pricing is used in situations where the IT department operates as a profit center. Using this method, markups are typically applied to either the total price that a customer is charged for all services or to the variable costs that are charged to the customer.

Note Applying markups to fixed cost, such as capital costs, makes those costs appear unfixed and only results in customer confusion. That is why financial managers typically apply markups to variable costs.

Flat Rate Plus Premium

Another pricing technique is to charge customers a flat rate for services provided and charge an additional amount for any special services that are not included in the flat rate. This is very similar in principle to the way that customers are billed for television cable services. For the basic package of channels, customers are charged the basic rate. For special packages, such as movie and sports channels, customers are charged an additional amount. In an IT organization these special services might include the operation of a legacy system that requires special hardware and support. For these services the customer would be charged a premium over the basic charges that are charged to all customers. One disadvantage of charging a flat rate for services is that customers may increase their usage in order to get their perceived "fair share" of the services being provided.

When using this technique, sufficient input must be garnered from the SMF managers responsible for providing the services for which flat prices are being formulated. They should consider the costs when services are provided under the best-case scenario and what costs are incurred if problems arise. Historical costs provide good guidelines for developing flat prices.

Market Rate

The market-rate method seeks to charge customers according to the prices that are being charged by vendors to perform the same service. The financial manager needs to assess what prices vendors are charging for services similar to what the IT department is providing and use these prices as a guideline for charging customers. The information collected should be retained to provide justification for the pricing policies established. One disadvantage of this method is that it can backfire if vendors are able to charge lower prices than the IT department.

Billing

Whenever the IT organization bills clients, every effort must be made to ensure that the bills are clear, concise, and accurate. The bills should be in a consistent format and delivered on a regular schedule. There should be no surprises.

Roles and Responsibilities

Principal roles and their associated responsibilities for financial management have been defined according to industry best practice. Organizations might need to combine some roles, depending on organizational size, organizational structure, and the underlying service level agreements existing between the IT department and the business it serves.

Financial Manager

IT managers are assigned the responsibility of handling the financial activities of a department. This individual can provide guidelines on organizational policy and assistance in setting up cost accounts and creating budget templates. This individual should have sufficient financial experience in the areas of budgeting, accounting, and costing, and should also fully understand how the IT environment operates. The financial manager should ensure that all policies that are developed conform to those adopted by the organization. Some activities of the financial manager include:

- Providing guidelines on organizational financial policy.
- Assisting in setting up cost accounts.
- Creating budget templates.
- Ensuring that all finance-related policies developed conform to generally accepted accounting principles.

Budget Committee

The budget committee assists the financial manager in creating the operating and capital budgets. This committee contains at least one representative from each role cluster defined in the *MOF Team Model*.

Relationship to Other Processes

The successful implementation of the financial management process involves the coordinated effort of all service management functions (SMFs) of the IT environment. The activities of budgeting, cost accounting, and cost recovery require input from all SMF managers concerning such items as expected resource requirements and actual resource usage. The financial manager must have an open line of communication to each manager and must provide the managers with guidelines for the reporting of financial information. The financial management process will not be effective unless all SMF managers are willing to work with the finance manager to provide the information necessary to conduct the financial management activities.

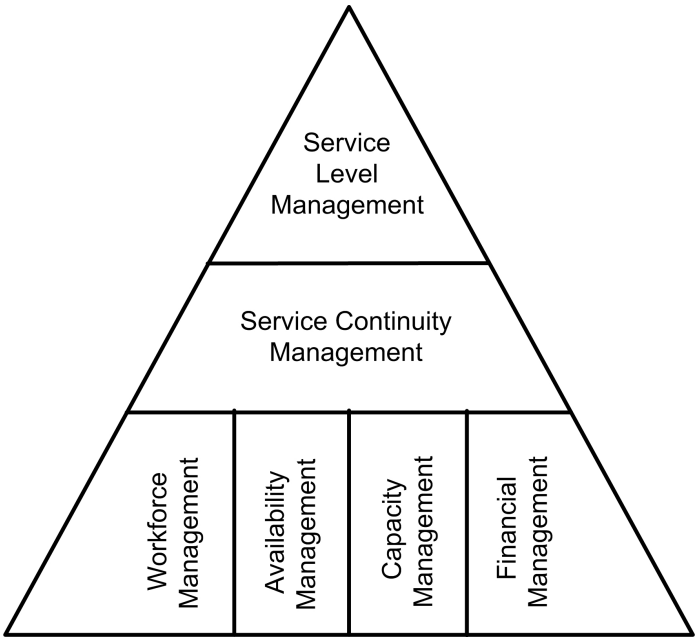

Figure 2

Relationship to other processes in the optimizing quadrant

Each process benefits from accurate cost collection and budgeting. Decisions in any process have a cost implication. Even though financial management is interrelated to all of the other processes, it is especially important in the optimizing quadrant of the MOF process model. The goal of the optimizing quadrant is to create service level agreement contracts that spell out the responsibilities of the IT department. In attempting to meet the requirements of the users, the IT department may have to create rough designs of some technical infrastructure components for availability, capacity, workforce, and service continuity. Financial management acts as a filter, limiting both

the requirements and the solutions to something that is economically feasible.

Service Level Management

Service level management is where the needs of users of IT services are itemized. The IT department then creates infrastructure design plans to address the needs of the users. The needs of the users can be broken down into a set of "foundational SMFs," including service continuity management, availability management, capacity management, and workforce management. Each SMF creates a thin design for an IT solution that meets the needs of the users. Financial management acts as a filter, ensuring that the needs of the users justify the cost of the solution required to meet them.

Service Continuity Management

If an entire network infrastructure is incapacitated due to a catastrophic disaster, a solid service continuity plan can mean the difference between losing a couple of days worth of work and losing months, or even years, of work. Cost information helps management put a price on service continuity planning and the cost of not performing such planning. Managers should include budgeting as part of their continuity planning.

Availability Management

How much will "seven-nine" (99.99999 percent) availability cost? What level of availability is necessary to the organization? Can the organization afford it? The finance manager can help the IT organization make better availability management decisions.

Capacity Management

Capacity management creates upgrade plans that are included in the budgeting process. Accurate cost information is vital in order to accurately budget capacity upgrades. Planning for capacity management entails the planning for new hardware and software. These costs should be incorporated into the annual budget. Costs may be the restraining factor in some decisions.

Workforce Management

Workforce management is responsible for training employees, monitoring their performance, and developing their careers. The cost issues of workforce management include the costs of hiring, training, and retaining the workforce needed to manage the IT organization. Frequent employee turnover can have negative impacts on system stability, customer support, and departmental performance.

Workforce management needs to work closely with the finance manager to determine the most cost-effective solutions to workforce issues.

Configuration Management

Configuration management includes the processes and procedures necessary to account for the equipment in its current configuration and for the historical documentation of all subsequent changes to that configuration.

Configuration management and financial management interact in several ways:

- Changes to a configuration may be costly.
- Simplifying system configurations may reduce costs.
- Accurate cost data is one tool in evaluating systems.

Change Management

Changes can have significant impacts on budget projections. The finance manager can evaluate the affordability of proposed changes to the network and help incorporate the cost of changes into the budget. In order to be proactive and not reactive, the anticipated costs should be incorporated into the organization's budget. It is important that anticipated costs be budgeted whenever possible.

Problem Management

When specific problems involving multiple systems become persistent on the network, problem management is used to determine the causes and the solutions to the problems. Solutions must be evaluated to ensure that the department remains within budget. Some problems and their solutions may be unforeseeable. When these occur, the trust developed during the budgeting process is vital.

Print and Output Management

Print and output management is responsible for providing services to customers in the most efficient manner possible. Efficient print and output management can help the organization avoid unnecessary hardware costs while providing improved customer support.

Network Administration

Network administration has very direct ties to financial management. Network administration is able to identify both shortages and surpluses in network hardware.

Network administration can identify potential problems and recommend proactive corrective action, thereby avoiding possible outages that can significantly impact the financial stability of the enterprise. The U.S. Department of Commerce reports that over 75 percent of all businesses that suffer a catastrophic disaster, causing significant data loss, are out of business within five years.

Contributors

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