Defining, Modeling & Costing IT Services

Integrating Service Level, Configuration & Financial Management Processes

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Table Of Contents

1. INTRODUCTION

In our cost driven economy IT is facing increasing pressure to account for and reduce cost wherever possible. The old axiom "You must do more with less" has never had such an impact on IT operations and support as it does today. Thousands of IT managers are being placed in a situation which forces them to defend their staffing levels against both internal as well as external threats. To address this situation, IT executives are being forced to better understand the services they are providing and to provide an accurate cost benefit analysis of why the services they offer are a better value than the services being offered by external groups who at the very least offer the promise of fixed or at least known costs.

Of course, the basic requirement to do this is to have a clear definition of what services the IT organization provides, the components and resources that make up the service and what the associated costs for these services are. Understanding the scope, characteristics and costs of defined services allows for better management of the IT infrastructure as a whole. The sad fact of the matter is that very few IT organizations can articulate what they do at this level of detail. Part of the reason for this lack of information is due to the relative process maturity and integration being practiced within many IT organizations.

This paper will examine the fundamental steps for:

- Defining IT services
- Modeling IT services in a Configuration Management Database (CMDB)
- Developing service based IT costing models

These activities are part of three IT processes (Service Level, Configuration, and Financial Management For IT) as documented within the Information Technology Information Library (ITIL®). While other processes have a relationship to this topic, these processes contain activities which directly related to the problem statement outlined above and will be the focus of this discussion.

For more information about ITIL, visit www.pinkelephant.com.

2. DEFINING IT SERVICES

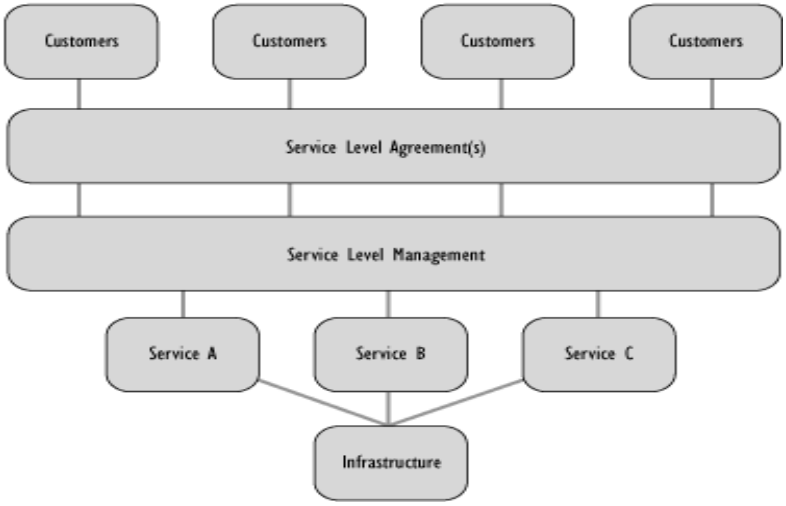
It is often said that in order to improve "something" one must first define it! This is no less true when dealing with the collection of activities that IT organizations execute for their business customers. Typically when looking at an IT organizational chart one can see a rudimentary breakdown of IT services defined at the directorate or senior management level. Common names for these structures fall under the categories of:

- Application Development
- Operations
- Facilitates Management
- IT Support
- Hosting
- Security
- Service Delivery
- IT or Architectural Planning
- Etc.

These structures begin to allude to the "professional" IT services which are being delivered to the customer and provide a starting point on how a certain category of services can be defined that are understood by both the business and the IT organization. While these structural names facilitate the definition of IT services they also promote a commonly held belief that IT services are silo or departmental based when this is not always the case. Much like a process an IT service typically crosses organizational and functional boundaries.

A major component of Service Level Management is the definition of IT services within a Service Catalog from which Service Level Agreements are negotiated with the client.

The following diagram illustrates how Service Level Management defines IT services, publishes them in a comprehensive Service Catalog and then develops Service Level Agreements based on these definitions with its customers.



The first step in the creation of an IT Service Catalog is the definition and development of a comprehensive list of IT services and systems that the IT organization provides to its customer base. In order to accomplish this task it is important to understand some basic definitions around types and classification of services.

IT Service:

- One or more technical or professional IT capabilities that enables a business process. An IT service exhibits the following characteristics:
  - Fulfills one or more needs of the customer
  - Supports the customer's business objectives
  - Is perceived by the customer as a coherent whole or consumable product

IT System:

- An integrated composite that consists of one or more of the processes, hardware, software, facilities and people, that provides a capability to satisfy a stated need or objective
  - Is a collection of resources and configuration items or assets that are necessary to deliver an IT service
  - An IT system is sometimes referred to as a Technology Solution

Configuration Item (CI):

- A component of an IT infrastructure that is part of an IT system
  - A CI is an ITIL term for what is often known as an IT Asset
  - CIs may vary widely in complexity size and type – from a document or policy to an entire system or a single module or a minor hardware component

2.1 Technical & Professional Services

When defining IT services the first order of business is to understand that there are two basic types of services that IT provides. These two types can be classified as either "Technical" or "Professional" services.

A "Technical Service" is defined as a technology based capability that the customer consumes or uses in order to facilitate a business process or function. Examples of Technical Services are:

- Email
- File / Print
- Application based services
- Network or internet access
- Office or desktop productivity
- Voice communications
- Etc.

A "Professional Service" is defined as the value added activities that IT staff provide in order to support, maintain, monitor or ensure the consistent and reliable delivery of the technical services. Examples of Professional Services are:

- IT Architecture and Engineering
- IT Security
- IT Support
- Project Management Services
- Procurement Services
- Application Development and Enhancement Services
- Etc.

2.2 Service Classifications

Along with Service Type it is also necessary to understand that services should be separated according to three basic classifications. These classifications are especially important when the time comes to apply them to a costing model. It is important to understand that the list of services distinguished under these classifications must be determined by each organization and will change according to the environment or business model being employed.

Core Or Essential Services:

- A Core Service is a service which is required by all business stakeholders and for which each line of business stakeholder must pay an appropriate share. These services are like "Air", you need them to exist and there is no option to opt out of their use or consumption. Typical examples of Core Services are:

    - Data \ LAN
    - Email
    - IT Support
    - Voice
    - Security

Subscription Services:

- A Subscription Service is a service that can be chosen in an "A La Carte" manner based on the business function the customer is engaged in. These services will only appear on the client bill of those clients that specifically use or subscribe to them. Examples of Subscription Services are typically application based services and are described according to the business process or function they support.

    - Enterprise Resource Planning (ERP) Services
    - Power Generation Systems
    - Online Banking
    - Trading Applications
    - Human Resources Management
    - Market Research
    - Enhanced Desktop Management or Forward Deployed Support
    - Etc.

Discretionary Services:

- Discretionary Services are services that IT provides on a pay-as-you-go basis. These services are typically only charged back to a client if the client requests them for a special activity outside a standard service package. Examples of Discretionary Services are:

    - Project Management
    - IT Consulting
    - Architectural Reviews of new technology
    - Procurement Services
    - Etc.

The full description and detailing of these services in an IT Service Catalog around various options of level and availability is the domain of Service Level Management and is outside the scope of this paper. For the purposes of modeling and costing it is enough that services have been defined and classified as a design input for Configuration Management and IT Finance. Going forward it is critical that the service definitions used in costing and billing is kept in alignment with the Service Catalog.

2.3 Steps For Defining IT Services

The following section defines the logical and sequential steps to define a list of IT services. Those steps are:

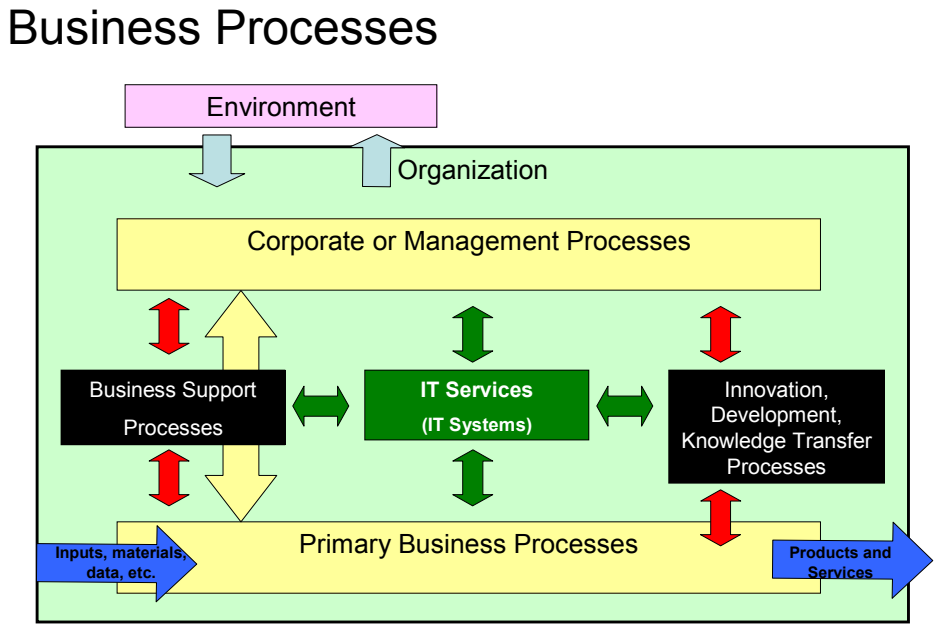
1. Define Major Business Processes
2. Define Enabling IT Services
3. Map IT Systems To IT Services
4. Map IT Components To IT Systems (This forth step is done by ITIL Configuration Management)

2.3.1 Step 1: Define The Business Processes

The most appropriate way to define IT services is from a business or customer perspective. To determine this IT must understand how it facilitates the business in enabling the various business processes. So logically it follows that the place to start this activity is to define what the business processes are. The following model is taken from the ITIL book *Understanding & Improving – The Business Perspective On Your IT Infrastructure*. This model breaks the business processes down into four major categories.

- Management Processes
- Support Processes
- Innovation Processes
- Primary Business Processes

Each of these categories in turn has sub-processes that need to be defined in order to get down to a useable level of detail to start the service definition activity.



2.3.2 Step 2: Defining IT Services

Many of the IT services will be defined and named after the business process or function the IT service facilitates. A benefit of aligning the IT service names with business processes is that improves understanding for both the customer and IT staff on how technology is aligned to meet business objectives.

To illustrate this activity the "Business Support Processes" category has been highlighted below:

Example Business Support Sub Processes:

- Examples of typical business processes in this category are:
  - Human Resources
  - Corporate Finance
  - Office Support
  - Logistics and Facilities Management
  - Communications
  - Etc.

While many of the service names will be common from company to company, each organization needs to go through this exercise in order to define its personal list of IT services. The activity of doing this is in and of itself a learning step that helps promote a better understanding of true business and IT alignment.

2.3.3 Step 3: Map IT Systems To IT Services

The next step in this process comes more naturally to technical people since it involves defining and naming the IT systems which the IT organization delivers and supports and mapping them to the IT service definitions. Remember that an IT system is a collection of components required to deliver a technology solution a customer. Often the IT system inherits the name of the primary application it is delivering. Another principle to keep in mind that while there is a single IT service definition, there are no limits to how many IT systems can be mapped to this capability.

Some examples of service / systems mappings are:

IT Service	IT System
Email	MS Exchange Lotus Notes
Shared Infrastructure	Data / LAN Voice Storage Management
HR Management	PeopleSoft Payroll

When all IT services and systems have been defined by Service Level Management this information is provided to Configuration Management to facilitate the design of the CMDB Object Model and to Financial Management for the development of the Service Based Costing and Billing Models.

2.3.4 Step 4: Map IT Components To IT Systems

The final step in this process is the mapping of IT components or CIs to IT systems. This is the function of the ITIL Configuration Management process and will be modeled in the Configuration Management Database. The next section of this paper will cover this topic.

3. MODELING IT SERVICES

Once IT services have been defined and documented the next step is to leverage the Configuration Management process in order to model those services within the Configuration Management Database. Through object and data modeling techniques a database of Configuration Items can be created to present both a business service view as well as a technology view of how CIs are related in order to support business processes. In effect the ultimate goal of Configuration Management is to facilitate the creation of a real-time virtual model of the IT infrastructure in relation to how it supports and delivers IT services.

3.1 Configuration Management Objective

Configuration Management provides a logical model of the infrastructure or a service by identifying, controlling, maintaining and verifying the versions of Configuration Items in existence.

The goals of Configuration Management are to:

- Account for all the IT assets and configurations within the organization and its services
- Provide accurate information on configurations and their documentation to support all the other service management processes
- Provide a sound basis for Incident Management, Problem Management, Change Management and Release Management
- Verify the configuration records against the infrastructure and correct any exceptions.

Configuration Management is an important part of the ITIL service management framework. It serves as the central hub for information sharing and collaboration.

An asset, in ITIL terminology, is called a Configuration Item. A configuration item can refer to any type of items the organization wishes to control.

The CMDB must be capable of registering these basic components:
Physical CIs: Server, switch, application, database, documents etc.
Logical CIs: IT services, systems, baseline records, etc.
CI Attributes: CPU speed, serial number, version, author, purchase date, etc
CI Relationships: Parent-child, hosts, installed on, provides data feed, etc.

3.2 Configuration Management IT Service Data Modeling

In order to model IT services an object and data model must be developed in order to illustrate how different CI types are represented, which attributes they have and what relationships connect them. The data model dictates how the IT services are mapped into the CMDB. The practical application of this is the creation of logical CI records that represent IT services and how they breakdown into IT system, subsystem and finally physical components. The concept presented by this approach allows the physical CIs (hardware, software, documents, etc) to be related up into an IT service chain as illustrated below.

To use an analogy:

If the infrastructure is the puzzle, and the CI the puzzle piece, then the Configuration Management Object Model design is the picture on the puzzle box.

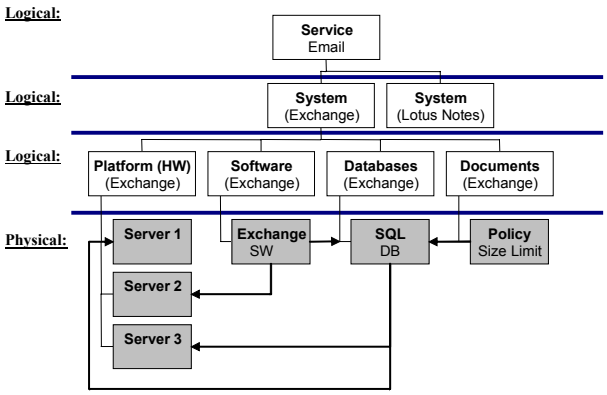
Just as it is difficult to build a puzzle without the picture, it is difficult to understand how various CI's fit into the infrastructure without the object model.

Some key benefits derived from this model are:

- The understanding of how CIs within the scope of the process relate to IT business services
- How direct and indirect asset costs are related to IT services
- How availability figures relate to individual CIs, groupings of CIs and overall service availability targets
- Which CIs facilitate multiple IT services
- Prioritization of CIs in relation to business criticality and function

For each of the IT business services and technical IT systems defined by the Service Level Management process there will be a record created in the CMDB within the logical structure. Once this structure is built within the tool the logical structure will remain relatively static and will not change drastically unless a new service is introduced to the environment.

Object Model & IT Services



- **Distinction between logical and physical Configuration Items**
  - **Logical: *Subsystems and above***
  - **Physical: *Components and below***
- **Tiered representation by vertically packaging design classes:**
  - **Service**
  - **System**
  - **Subsystem**
  - **Component**

4. DEVELOPING A SERVICE BASED COST MODEL

IT struggles in many areas to become more proactive in the management and delivery of its services to the client. This is nowhere more apparent then in the way that technology costing is typically done.

Regrettably what usually occurs during the year is that all IT costs and expenses are collected into a large cost center or proverbial bucket which at the end of the fiscal period gets upended on the table and then is divided up equally across the clients regardless of use.

There is little to no ability to express accurate costs for providing services to clients, let alone to provide an accurate tracking of how services are consumed by its customers. This practice provides no ability to use costing as a management and planning tool since you cannot improve what you don't understand.

4.1 Financial Management For IT Services

Objective: Financial Management is the sound stewardship of the monetary resources of the organization. It supports the organization in planning and executing its business objectives and requires consistent application throughout the organization to achieve maximum efficiency and minimum conflict

An interesting comment that one often hears when speaking to organizations about the discipline of costing is that they are a "cost center" and as such, they are not in the business of charging for their services. This is often used as a convenient excuse to not look at the disciplines of IT costing in any significant detail. However, the logical response to these organizations is that even though they may not provide a bill to an internal business client they still have to account for the cost of provisioning IT services to the business, and in turn receive next years budget allocation. Recently this has become even more important with the current focus of the market being on cost reduction and financial governance. IT organizations are no longer being afforded the grace they once were, and the business is demanding an accurate accounting and tracking of IT costs related to use and consumption.

Of course, the catch here is that you need to have defined and modeled these services first before you can cost them effectively. Trying to develop a costing methodology without implementing the first two these steps outlined in this paper becomes very difficult if not impossible to do accurately.

4.2 Understanding IT Costs

Admittedly ITIL does not dictate what type of costing methodology should be employed. However, the *ITIL Service Delivery* book does do a good job of summarizing the two most basic approaches of "Cost Centered Accounting" and "Activity or Service Based Costing."

At a high level, **Cost Centered Accounting** is the practice of pointing all costs and expenses in their direct form at a client or organizational entity. This is traditionally the most widely used costing method since it works well with the concept mentioned earlier of allocating the general cost of doing IT across all clients in whatever equitable fashion can be devised.

Activity or Service Based Costing is the practice of pointing all related costs and expenses at a defined activity or IT service. Once the service has been completely costed a unit cost is defined. This becomes the tool for understanding how the activity or service can be allocated to a customer based on the consumption of the service.

To further explore these concepts we need to define a few key terms.

Definitions:

- Direct Costs: Clearly attributable to a single customer\service\location
  - These costs are directly related and are completely attributable to a specific customer or service

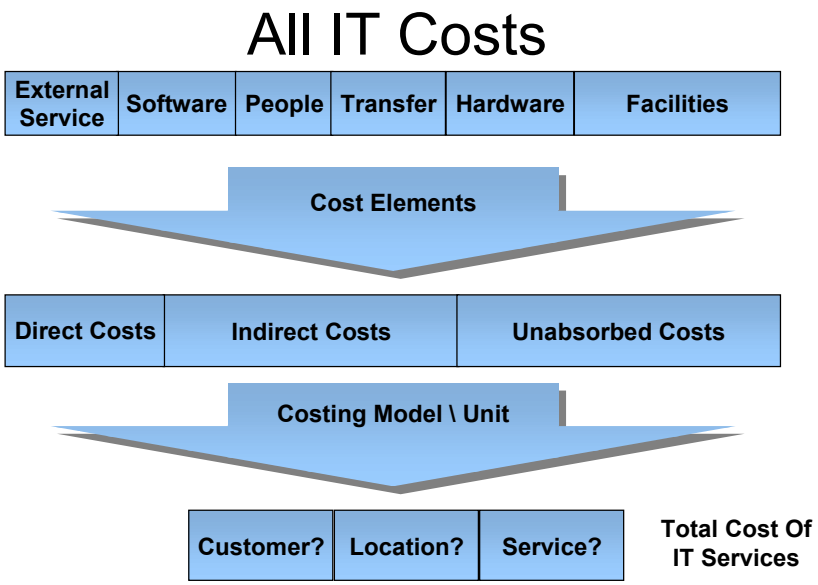
- Indirect – Shared Costs: Incurred on behalf of all, or a number of customers\services\locations
  - These costs are shared across a number of customers and services and are allocated according to some driver such as head count or percentage

- Unabsorbed or Overhead Costs: Are costs which can not be directly attributed to a customer\service\location
  - These costs are not attributable to a customer or service. Examples of overhead costs are executive salaries, general administrative activities, etc.

- Cost Unit: A cost unit is a breakdown of the total cost of a service into a small unit
  - A cost unit is a breakdown of an entire service cost into a unit that can be allocated to a consumer. An example of a unit cost is the cost per mailbox for an email service charged to a line of business.

It is important to build a costing methodology which includes all three types of cost since a service which is only costed based on direct costs will be ultimately under recovered.

Milk Analogy:
A non-IT example of this principle would be the calculation of the total cost of a glass of milk. If you were only to account for the cost of the care and feeding of the cows your unit cost for the glass of milk might only cost 50 cents. However, when you layer in or allocate a percentage of the farm insurance costs, the mortgage and the lease payments on the farm equipment the total cost of your glass of milk may come to $1.10. In essence everything needs to be paid for eventually.

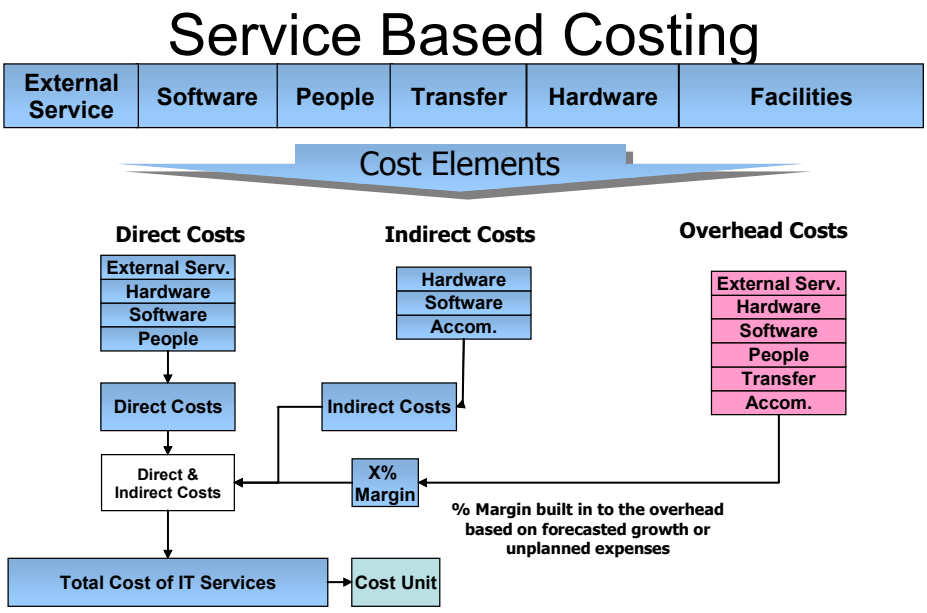


While ITIL indicates no preference for either cost centered accounting or service based costing, the logical preference would be service for the simple reason that the philosophy of service management is more closely aligned with service based costing.

4.3 Service Based Costing

By its very name service based costing suggests an end-to-end view of the costs of delivering an IT service. Practically this means that a costing methodology and set of cost centers need to be defined using the service definitions provided by the Service Level Management process and as published in the service catalog. In principle this means that the line items appearing on the client bill are synchronized with the services as they are defined within the SLAs and how CIs are captured and modeled within the CMDB.

The following figure illustrates how the principle of direct, indirect, and overhead costs all come together to provide a complete picture of service based costing.



Based on the CIs and roles that are modeled against the IT service in the CMDB the direct costs for the service can be derived fairly easily through query of the financial attributes recorded against those CIs that have no other service relationship. Also there will be some CIs which are related to multiple services in a cross functional capacity. An example would be an application server that host multiple applications, the server in question would need to be allocated across however many services it facilitated.

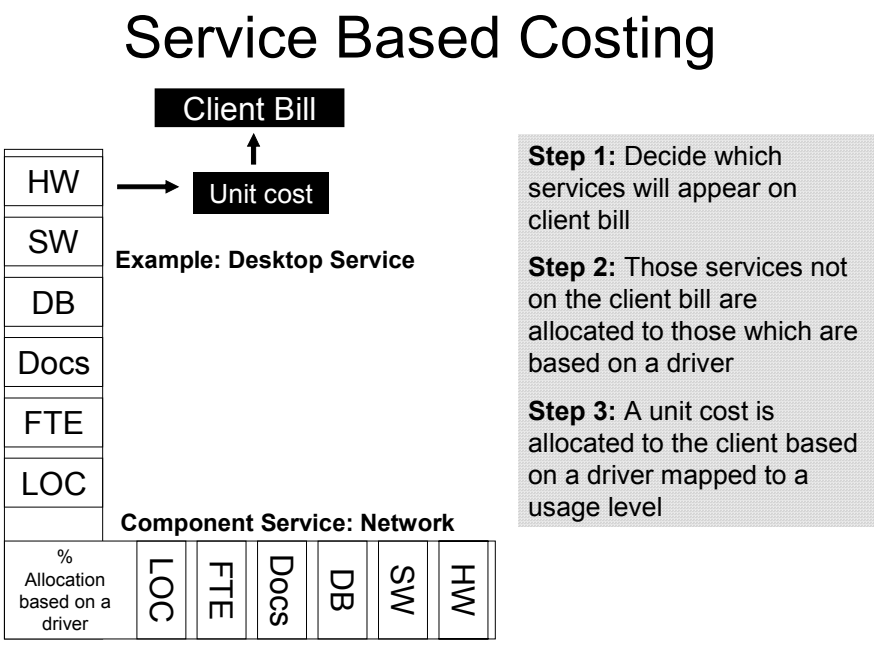
4.4 Component Services

Another element to consider when establishing the indirect or shared costs is what's referred to as component services. A component service or utility type service is a fully costed service that is not directly displayed on the client bill or cost recovery mechanisms. The result of this decision is that they need to be allocated on top of a direct or client facing service in order to be recovered. Which services are deemed to be component services is a decision of the IT financial process in the development of the costing methodology. Examples of a component or utility service would be if the IT organization wished to allocate the network service across other services as a shared or indirect cost. A utility type of service might be the cost associated to a data center, mainframe or raised floor facility. These services are allocated against others which are client facing based on some defined driver. A driver is the allocation method used to apportion the costs against other services and might be as simple as a straight percentage, head count, floor space, or number of components.

4.5 Service Based Costing Steps

The high level steps for costing the services defined by Service Level Management are as follows:

Step 1: Define IT services and systems
Step 2: Decide on the service classification (core, subscription, discretionary)
Step 3: Model the services and systems in the CMDB
Step 4: Decide which services and systems will appear directly on the client bill
Step 5: Allocate services that are not on the client bill against other services
Step 6: Define drivers and an allocation methodology for the component services
Step 7: Define a unit cost for the client facing service based on usage



Legend:

HW = Hardware	SW=Software
DB=Databases	Docs=Documents, contracts, licenses
FTE= Dedicated people resources	LOC= Facilities

Note: The diagram above illustrates two fully costed services where one is presented on the customer bill (desktop) and the other is allocated as a component services (network) with a percentage of the overall cost of being applied to the total cost of the desktop service.

5. CONCLUSION

In conclusion IT organizations are no longer being afforded the grace they once were, and the business is demanding an accurate accounting and tracking of IT costs related to use and consumption. Services need to be defined and managed in a proactive manner that facilitates management decision-making. It is important to understand the integration of Service Level, Configuration and Financial Management and the strength of the integrated model. One could go further to discuss the correlation to Availability, Capacity, and IT Service Continuity which should also be synchronized in their development and reporting with the service definitions. Regardless of where your organization is in the pursuit of its Service Management goals, the important thing to keep in mind is that the true power of the ITIL framework is not in the description of best practices for a single process, but in the integration of the overall framework.

6. ABOUT PINK ELEPHANT

Pink Elephant is privately owned and is headquartered in Toronto, Ontario, Canada with operations throughout the Americas, EMEA and the Asia Pacific region. Pink Elephant works with an extensive array of clients, both public and private and many listed in the Fortune 500, to improve the quality of IT services through the application of established best practices, including the Information Technology Infrastructure Library (ITIL).

Service Lines

Pink Elephant's service lines each provide different, but complementary business solutions:

- *Business Process Consulting*: Using the ITIL best practices approach to IT service management as a springboard, Pink Elephant provides end-to-end solutions – from assessments, to strategic planning to implementation, continuous improvement and beyond. Experienced consultants work hand-in-hand with customers every step of the way.
- *Conferences & Special Events*: Pink Elephant is the world's largest producer of IT Service Management conferences and delivers several major events per year, including the Annual International IT Service Management Conference & Exhibition
- *Education*: Pink Elephant is the most prolific creator and most widespread distributor of ITIL training, delivering four levels of certification – Foundation, Practitioner, Management and Executive
- *ATLAS*: ATLAS is a secure, web-enabled knowledge management system containing much of Pink's highly valued intellectual property – ready and waiting for users to access, copy, customize and re-use

ITIL Leadership

Pink Elephant has grown to become recognized globally as *The ITIL Experts* and is very proud of its commitment to the ITIL best practice framework. In fact, many Pink Elephant consultants have been involved in the "ITIL project" since its inception in 1987. Furthermore, Pink Elephant was:

- The first organization in North America to publicly offer the Foundation, Practitioner and Management levels in the ITIL certification program
- The first in North America to offer Executive level certification training – based on ITIL's strategic business perspective books: *Understanding and Improving, In Times of Radical Change* and *Surviving IT Infrastructure Transitions*

- One of the founding members of the IT Service Management Forum (now *it*SMF) – the worldwide networking group for IT service management professionals

Awards

Pink Elephant is recognized as a progressive and successful company and is the recipient of the following awards that reflect its corporate leadership excellence and business results:

- Top 100 Fastest Growing Companies in Canada – 2000, 2001, 2002 and 2003: Awarded annually by Profit Magazine. Pink Elephant was recognized as one of Canada's fastest-growing companies (based on a comparison of revenue growth for five consecutive years)
- Top 100 Canadian IT Professional Services Organizations – 2002: Awarded annually by Branham300
- Top 100 Woman Entrepreneurs – 2001, 2002, 2003, 2004: Awarded to Pink Elephant Chair, Fatima Cabral, by Profit and Chatelaine magazine
- Ontario Global Traders Award – 2002: Awarded by the Ontario Government for achievements in innovation, leadership, product excellence and expansion into new markets
- EXIN Award: Given to the organization with outstanding achievements in promoting the IT Service Management framework outlined in the IT Infrastructure Library (ITIL) – the world's most popular set of IT management best practices.

To learn more about Pink Elephant's services visit www.pinkelephant.com, or call us at 1-888-273-PINK.

