

A Study on Cost Estimation of Information Technology Service Delivery using Service Management System

SULFATH K K*, Dr. P.R RAMAKRISHNAN and Dr. P.M. SHAREEF

<https://doi.org/10.56343/STET.116.016.001.006>
www.stetjournals.com

Article History

Received: 10.07.2022

Revised and Accepted: 09.08.2022

Published: 10.09.2022

Abstract

Cost and revenue are two sides of a coin. Information Technology (IT) services need to be provided seamlessly for enabling users to use a plethora of services in an organisation. These services are used by all departments across the organisation. The IT department of an organisation handles some of the services on a routine manner in order to upkeep the health of the systems and network. IT services involve cost and in order to ensure a high level of service, organisations need to invest in IT. The investment keeps changing since some of the software and hardware are provided by third party vendors. In order to address different challenges, an enterprise has to optimize and update their business operations. Organisations are paranoid of using freeware since clients may not accept freeware and they are forced to invest in license based software. Here estimating cost is very important for an organisation in order to achieve a minimum level of profitability. In this paper, we have studied some existing works on cost estimation of service delivery using service management system

Keywords: Cost Estimation, Freeware, Information Technology, Networks, service management.

Introduction

Organisations provide different sets of services to its employees across projects and support teams. This involves installation of software, database, network tools and other hardware and

software. Accurately estimating software size, cost, effort and schedule is probably the biggest challenge for software developers nowadays. Software cost estimation is a complex activity that requires knowledge of a number of key attributes about the project which is being constructed. Many organisations are facing challenges to find out the exact total costs caused by offering their own services. Organisations do not do cross charging across user departments. They apportion the cost across all departments uniformly. The main focus will be to have a state of art datacentre with high end servers and network components and tools to provide high quality services. There cannot be a single framework for cost management that can be applied for all organisations. Each organisation is unique and the business depends on the type of clientele they service. Organisations which service clients in the banking domain need to have robust infrastructure to ensure that their network is secure and it is not compromised at any point of time. Data security is also of concern and there should be mechanisms to ensure that data breach does not happen. They also need infrastructure to perform backup of data and ensure that data is intact throughout the tenure of the project. If an organisation needs to have penetration across all business verticals, they need to invest in IT infrastructure. Though there is an option for cloud services, not many customers will approve of this approach as they might not like to jeopardise their data and information.

SULFATH K K

Research Scholar, VISTAS, Chennai, India
email: sulfaths@gmail.com

P-ISSN 0973-9157

E-ISSN 2393-9249

Literature Review

Though there are a number of literature pertaining to cost management of IT operations, specific cost model for an IT sector is not propounded by any author. In other words, return on investment on IT is always challenging and unpredictable. There exists an integration between the processes of capacity management, quality management, and resource management which forms the backbone of the planning and control process for operations management in services. There are bedroll of issues in IT operations which needs to be addressed in order to achieve highest level of service quality and the same has been mentioned by multiple authors. (Lovelock 1984, Rhyne , Heskett *et al* 1990).Demand and Capacity is the bedrock of business and IT services is nudging towards the same and there is always an uncertainty with respect to managing capacity in the ever changing business scenario.

IT organisation needs to invest in capital assets in order to ensure highest level of service. They either can opt for physical assets or for cloud based solution. Depending on the security aspects, physical assets are required and thus capacity management poses a herculean task at highest level of decision making. Demand must be met but at the same time, capacity should be utilised in order to fulfil the demand. Foreseeing a requirement and planning for the same is the hurdle for an IT department. Forecasting is not based on formulae but on customer needs. (Lovelock, 1984) and over capacity will make the assets redundant. Sasser (1976) has suggested two basic strategies for managing capacity in services of “Level” and “Chase”, the former applicable where capacity is limited and hence the focus is on influencing demand to be in line with capacity, and the latter strategy being possible when supply can be changed to keep in line with demand. Consequently, operations managers must understand the composition of their capacity, the degree to which it can be changed, and the speed of reaction (Slack, 1987) and the costs involved (Heskett *et al* 1990).

In tactical planning, workforce capacity is considered fixed and the objective is to develop efficient schedules that balance firm and individual goals and constraints. Short term planning involves determining time phased resource requirements, while rostering involves assigning individuals to specific schedules. In strategic planning, workforce capacity is a decision variable. In medium term planning we seek to make near term capacity adjustments through new hiring and termination. Long term planning involves shaping the workforce over an extended period of time and considers issues such as career progression and skill shifting.

Objectives of this paper are:

1. To study the various costs involved in IT services
2. To develop a service delivery cost model

Research Method

The researcher has used a combination of descriptive and exploratory approaches for the present study. Though there are published articles on the subject, cost estimation for IT service delivery is unique and can be mind boggling. The researcher intends to propose a service delivery cost model for an IT organisation.

Proposed Methodology

The service management system does not provide a mechanism for evolving a cost model for providing IT services. The funding for IT is at the discretion of the organisation. The authors propose the following matrix for capacity planning (Table 1).

Table 1: Matrix for capacity planning

| S.No | Infrastructure component Cost | Usage |
|------|-------------------------------|------------|
| 1. | Servers | Datacentre |
| 2. | Storage | Datacentre |
| 3. | Network tools | Datacentre |
| 4. | Desktop tools | Datacentre |
| 5. | PCs for users | User |
| 6. | Database | User |
| 7. | Tools for users | User |

The above infrastructure (Table 1) can be classified as Capex and Opex depending on the usage of the infrastructure.

Another challenge is with respect to the network bandwidth requirements. This cannot be predicted exactly. Bandwidth requirements should be adequately planned using a risk assessment approach by opting for a leased line for a definitive bandwidth based on the business need with a built in redundancy.

Qualitative research was chosen for data collection and data analysis technique for this research. The reason why qualitative research was chosen is because it concentrates on generating or using non-numeric data which usually means words. In this case this seemed fit for purpose more than quantitative research which instead concentrates on generating or using numeric data which usually means numbers. (Saunders *et al.* 2007). Regarding the respondents 15 people included two project managers, all process owners in service management process and IT manager who is the head of IT.

Data Analysis

The answers provided by respondents were analysed and their views on capacity management was analysed. There were multiple views on this aspect. One aspect that emerged is that capacity planning worksheet should be evolved which can be generic for IT infrastructure. Though it again depends on the organisation, which checklist to be used for their operational purpose, the exercise of bringing out a generic checklist will be futile since business is unique and complex. Some business will not disclose their IT infrastructure assets to external parties. The best fit approach for cost estimation for IT service delivery should be based on budgets and this should be monitored on a monthly basis. Towards this finance department of organisations should equally take part in evaluating IT services cost so that a nearest value can be attained. The proposed model comprises of the following activities

- a. Identify the budget
- b. Baseline the operations
- c. Maximise utilisation
- d. Minimise software overheads
- e. Evolve cost matrix for each service with cross charging
- f. Involve Capacity Planning Group to focus on Capacity-Cost-Profitability

The capacity reports can be classified based on the needs of the organisation and are shown below;

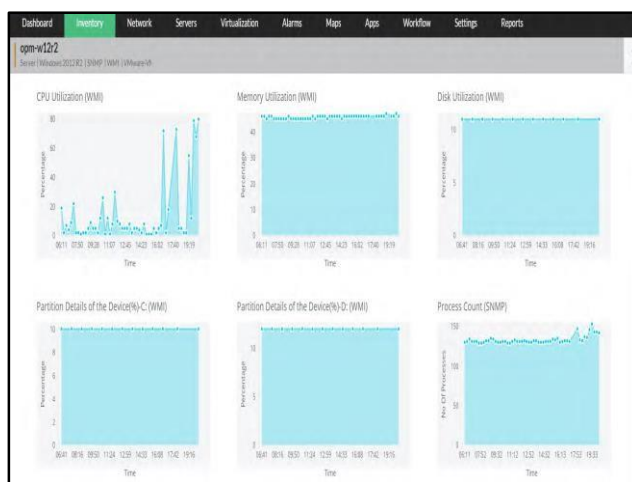


Figure 1 - Server Performance Monitoring

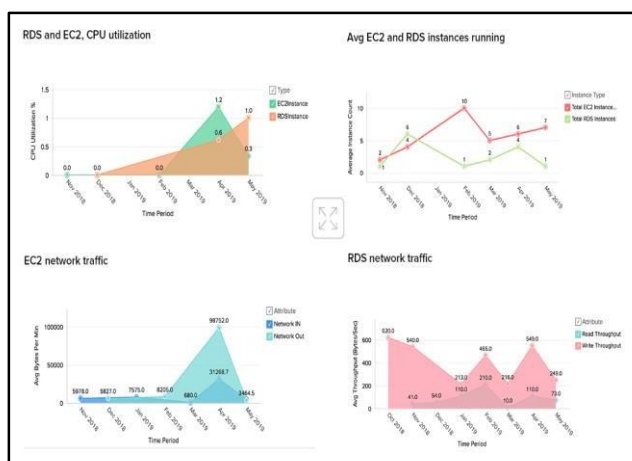


Figure 2 - Network Monitoring



Figure 3 - Network Infrastructure Management

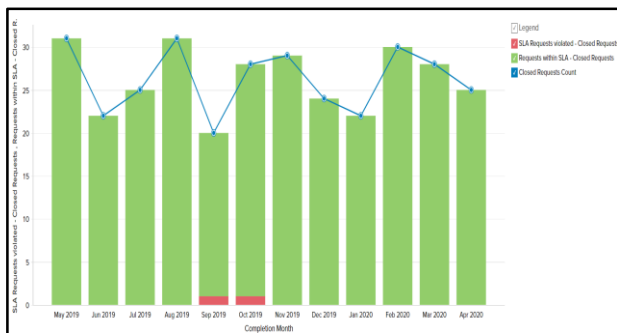


Figure 4 - Trend Report for improving capacity

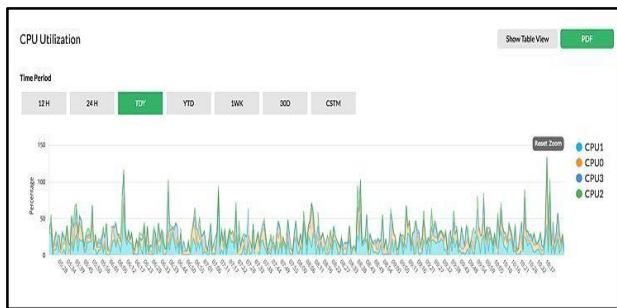


Figure 5 - CPU Monitoring

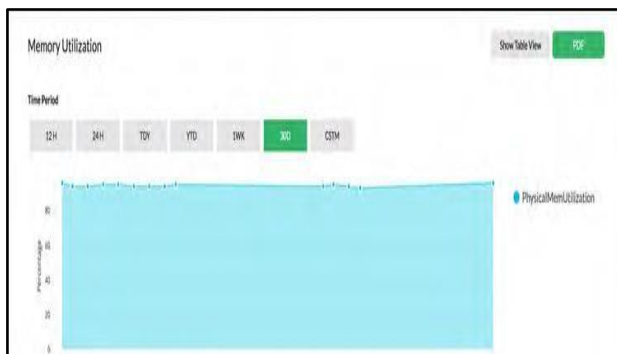


Figure 6 - Memory utilization

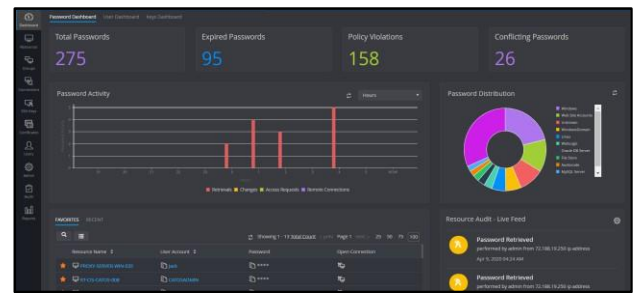


Figure 7 - Password Management

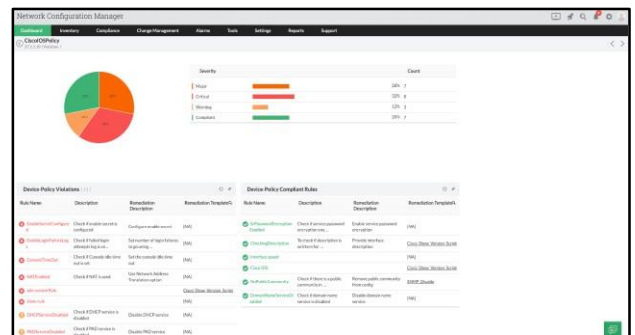


Figure 8 - Network devices monitoring

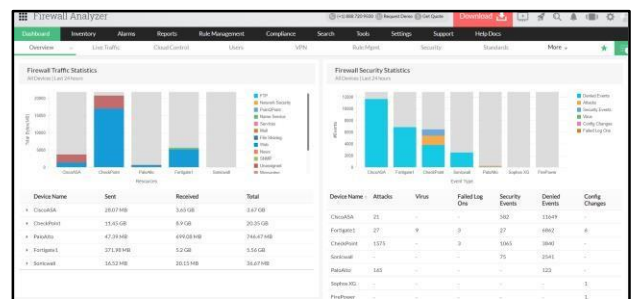


Figure 9 - Firewall log management

Conclusion

Cost estimation of IT services using SMS poses a highest challenge. The standard does not provide any mathematical approach to achieve this objective. Since business operations are carried out using business models, the challenge will haunt the organisations in the years to come. Even IT companies have adopted to outsource their IT operations to third party vendors for a fixed term in order to control cost. Though the cost benefit analysis remains a reckoning factor, business decision based on cost alone may not yield the desired results. Organisations working with large external clients situated across the globe may not

be willing to partner if the IT operations are outsourced. Hence it is incumbent upon the organisations to evolve a cost estimation strategy for providing IT services to the users across the organisation. Cost and capacity are related to each other and hence if we need to optimise cost we should not compromise on capacity. Capacity needs to be monitored periodically in order to arrive at a right decision based on facts. Cost optimisation should be planned based on the output of capacity utilisation. It is imperative that capacity management should be focused adequately in order to derive the estimated cost for providing IT services. The authors' proposed model will pave the way for evolving a capacity model for IT organisations and no doubt Capacity Management is the fountainhead and cornerstone of SMS and needs an imprimatur from the business honchos.

References

- Betz, C. 2007. Architecture and Patterns for IT Service Management, Resource Planning, and Governance. Making shoes for the Cobbler's Children. Elsevier: San Francisco.
- Van Bon, J.; de Jong, A.; Kolthof, A.; Pieper, M.; Tjassing, R.; Van der Veen, A. and Verheijen, T. 2007. IT Service Management based on ITIL V3. A Pocket Guide. First edition. Van Haren Publishing: Zaltbommel.
- Cartlidge, A.; Hanna, A.; Rudd, C., Macfarlane, I., Windebank, J. and Rance, S. 2007. An Introductory Overview of ITIL V3. The UK Chapter of the itSMF, Wokingham: IT Service Management Forum Limited., 64
- Encyclopedia.com 2011. Queuing network. Referenced on 15.9.2011 <http://www.encyclopedia.com/doc/1011-queuingnetwork.html>
- Grummitt, A. 2009. Capacity Management. A Practitioner guide. First edition. Van Haren Publishing: Zaltbommel.
- Gunther, N. 2007. Guerrilla Capacity Planning. A tactical approach to planning for highly scalable applications and services. Springer: Berlin.
- Investopedia 2011. Queuing Theory. Referenced on 15.9.2011 <http://www.investopedia.com/terms/q/queuing-theory.asp#axzz1Y0JoJBLt>
- Lucid IT 2007. ITIL Version 3. Referenced on 13.11.2011 http://www.lucidit.com.au/itil_version3news.ph
- Menascé, D., Almeida, V. and Dowdy, L. 2004. Performance by Design. Computer Capacity Planning by Example. First edition. Upper Saddle River, Prentice Hall.