PROPOSED GUIDELINES FOR ESTABLISHING BASELINE FOR NETWORKING INFRASTRUCTURE IN CAMPUS ENVIRONMENT: A CASE STUDY OF FACULTY INFORMATION TECHNOLOGY (FTM)

A thesis submitted to the Information Technology Faculty in partial fulfillment of
Requirement for the degree of
Master of Science (Information & Communication Technology)
Universiti Utara Malaysia

By

WASEF MAHMOUD SA'D MATER

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ABSTRACT

Baseline plays a deterministic role in providing network managers with state-of-the-art information on their networks' current performance for future capacity planning. The lack of a simplified model and/or framework for creating baseline hampers the process of capacity planning thus cause many problems for network managers. Using multi-purpose multi-design research approach, this thesis objectively proposes systematic guidelines to create baseline for further capacity planning facilitation. Proper care has been taken in assessing the baseline requirements to capture all necessary information on networking infrastructure needed to create baseline. The authenticity and validity of the proposed guidelines has been tested using a short evaluation by experts, moreover, baseline for FTM's networking infrastructure has been established by implementing our proposed guidelines. It is hoded that our proposed guidelines, by all means, provide invaluable contribution to help FTM to develop the future capacity plan and gives a direction towards future research in capacity planning.

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CHAPTER 1

INTRODUCTION

Capacity planning is used to plan hardware and software purchase, upgrades, and to strengthen the whole networking infrastructure. It helps the management for decision making to match the current communication infrastructure's capacity for effective utilization or underutilization. Since the Service Level Agreement (SLA) has great importance for effective networking infrastructure's management, it also enables the prediction of resource requirements, thus help in fulfilling SLA while minimizing the operational costs O'Donnell, (2004). However, a standard and state-of-the-art capacity plan is only viable when it documents up-to-date operational state of the network. In order to document the network operational state, creating a baseline is a must which further helps in identifying network bottlenecks, error statistics, and collisions. Moreover, establishing a baseline also provides further help to formulate capacity plan according to organization's future needs and to support the management decisions making.

Universiti Utara Malaysia (UUM) plans to be a world class university by the year 2005; in order to realize the vision and mission, sufficient communication infrastructure is needed to support them. Hence, it would be inevitable to prepare a comprehensive capacity plan to identify the gap between the available network infrastructure, current utilization portfolio, and future requirements.

Being a proactive extension of the performance management and strategic function of any business portfolio, baseline plays a deterministic role in documenting current operational state of the network which helps in bringing order the operational chaos

The contents of the thesis is for internal user only

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