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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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CASE STUDY OF FACULTY INFORMATON TECHNOLOGY (FTM)**

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**UNIVERSITI UTARA MALAYSIA
2004**



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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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TABLE OF CONTENTS

PERMISSION TO USE	I
ABSTRACT	II
ACKNOWLEDEMENT	III
TABLE OF CONTENTS	IV
LIST OF FIGURES	VII
LIST OF TABLES	VIII
CHAPTER 1: INTRODUCTION	
	2
1.1 Problem Statement	
1.2 Objectives of the Study	3
1.3 Scope of the Study	3
1.4 Significance of the Study	3
1.5 Methodology	4
1.6 Conclusion	6
CHAPTER 2: LITERATURE REVIEW	7
CHAPTER 3: NETWORK INFRASTRUCTURE FOR FTM	
3.0 Introduction	14
3.1 Types of Network	14
3.1.1 Local Area Network (LAN)	14
3.1.2 Metropolitan Area Network (MAN)	14
3.1.3 Wide Area Network (WAN)	14
3.1.4 Campus Area Network (CAN)	15
3.1.5 Tiny Area Network (TAN)	15
3.2 Network Topologies	15
3.2.1 Linear Bus Topology (LBT)	15

3.2.2	Star Topology	15
3.2.3	Tree Topology	16
3.3	Other Networking Devices	16
3.3.1	Hubs	16
3.3.2	Switches	17
3.3.3	Routers	17
3.3.4	Physical Media	18
3.3.4.1	Twisted Pair Copper Wire	18
3.3.4.2	Coaxial Cable	19
3.3.4.3	Fiber Optics	19
3.4	UUM-Networking Infrastructure	20
3.4.1	Cabling System	21
3.5	FTM- Networking Infrastructure	21
3.6	Media Used By FTM	25
3.7	Conclusion	27
 CHAPTER 4: GUIDELINES TO ESTABLISH THE BASELINE		
4.0	Introduction	28
4.1	Creating Baseline	30
4.1.1	Establish Network Inventory	31
4.1.2	Criteria Definition	34
4.1.2.1	Segment Utilization	35
4.1.2.2	Number of Nodes	37
4.1.2.3	Operating Protocols	37
4.1.2.4	Application Utilization	38
4.1.2.5	Error Statistics	39

4.1.3	Define Standard Format	40
4.1.3.1	Standard Format for Network Base and Node Base	40
4.1.3.2	Standard Format for Network Errors and Station Errors	42
4.1.4	Establish Centralized Database	43
CHAPTER 5: CONCLUSIONS		
5.0	Overview	52
5.1	Conclusions	52
5.2	Limitations of the study	53
5.3	Recommendations	54
REFERENCES		55
APPENDIX-A		57
APPENDIX-B		64

LIST OF FIGURES

NUMBER	TITLE	PAGE
FIGURE 1	Summary of Research Methodology	5
FIGURE 2	Crossbar architecture (Avaya™ Documentation, CD ROM)	23
FIGURE 3	Utilization in Percentage	45
FIGURE 4	Total Packet In	46
FIGURE 5	Short Term Broadcast Packet Statistics Collection	47
FIGURE 6	Port History Line Graph	48
FIGURE 7	Switch Statistics	49
FIGURE 8	Switch Statistics	50
FIGURE 9	Exemplary Centralized Database in Excel Spread Sheet	51
FIGURE 10	Linear Bus Topology	58
FIGURE 11	Star Topology	58
FIGURE 12	Tree Topology	59
FIGURE 13	Networking Hubs	59
FIGURE 14	Switches	59
FIGURE 15	Routers	60
FIGURE 16	Unshielded twisted pair cable	60
FIGURE 17	Shielded twisted pair cable	60
FIGURE 18	Coaxial cable	61
FIGURE 19	Fiber Optic Cables	61
FIGURE 20	Fiber Optic Cables	62
FIGURE 21	FTMs' Topology	63

LIST OF TABLES

NUMBER	TITLE	PAGE
TABLE 1	Details of FTM's Networking Infrastructure	25
TABLE 2	Servers Specifications	26
TABLE 3	Web Server Specifications	26
TABLE 4	Domino Servers' Specifications	27
TABLE 5	Steps to Create Baseline	31
TABLE 6	Example of Networking Inventory	32
TABLE 7	Standard for Ethernet baseline	40

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

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