

**UNIVERSITI TEKNOLOGI MARA**

**END-TO-END AVAILABLE  
BANDWIDTH MEASUREMENT FOR  
WEB-BASED APPLICATION**

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Dissertation submitted in partial fulfillment of the  
requirements for the degree of  
**Master of Science in Computer Networking**

**Faculty of Computer Science and Mathematics**

November 2009

## ACKNOWLEDGEMENT

First and foremost, all praise be to Allah, the Most Merciful, for His Love and Guidance. Salutations on the Prophet Muhammad (Peace be upon him), his family, and fellow companions.

May I express my appreciation to ALLAH, the beneficent, the merciful, for making me a Muslim and blessing me with the privilege of acquiring a higher degree.

First and foremost, I thank my parents, Mohamed Miloud and Keyrria Mohamed for their unconditional love and support throughout the years. Words cannot begin to describe the ways in which they have encouraged and inspired me. I would never have been able to accomplish this work without their unwavering faith in my abilities. Thanks Dad and Mom, May Allah bless you always.

I thank my brother Majdy for always being there for me and for egging me on during stressful times. I thank all my sisters for giving me the strength needed to finish this dissertation. Thank you so much and may Allah bless you all.

I am deeply indebted to my supervisor Mr. Faisal Ibrahim whose help, stimulating suggestions and encouragement helped me in all the time of research and writing of this dissertation. Without his guidance this dissertation would not be possible to be finished. His expertise in the area of Network measurements improved my research skills and prepared me for future challenges. His kindness, time and effort will always be remembered. May Allah reward him with his blessing for all that had been offered.

I also would like to express my deep and sincere gratitude to our programme coordinator Mr. Farok Haji Azmat for giving me the opportunity to explore my interest in computer networking. Thank you for your advice and encouragement throughout the programme. May Allah bless you for the effort that you always give.

Last but not least, I would like to thank all my friends for the supports that had been given during the process of completing this dissertation. Thank you for being very supportive and understanding. May Allah bless you always.

Thank you all...

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## ABSTRACT

The concept of bandwidth is central to digital communication, and specifically to packet networks, as it relates to the amount of data that a link or network path can deliver per unit of time. For many data-intensive applications, such as file transfer or multimedia streaming or applications that have QoS requirements, the bandwidth available to the application directly impacts applications performance. Internet is rapidly grow and becomes a necessary technology in our daily life, and because of mobile communication systems people can access the internet/network anytime and anywhere. Therefore, because of such growth the number of user increases. Also such evolution brings new services that will require more data rates. As a result of this load some services and users in the network will ask for certain data rate which will not be guaranteed, because of the limitation in the transport network's available bandwidth that can not satisfy the number of users and services. In the past, there have been several proposals that deal with the diverse QoS requirements of users and applications. These proposals have, however, not been deployed, and the Internet still remains a black box from the end-host perspective. In this research we developed bandwidth estimation module (BEM) that can provide accurate information regarding the available bandwidth to the users or applications. Considering our stated goal, we find that our BEM system does provide accurate available bandwidth estimates and it operates without explicit cooperation from the network or servers; and it provides reliable estimates without excessive time overhead.