

Dedication

**With much pleasure I
wish to dedicate this
research to my**

Father soul,

Mother,

Brother

soul,

Sisters,

And

friends

ACKNOWLEDGEMENT

I wish to express my thanks and gratitude to my supervisor Dr. Ashraf GasimElseed for his help and guidance through several stages of this work. I am also grateful for the assistance of my colleagues and staff in the College of Computer Science and Information Technology who supplied me with all the resources needed to complete this study .

Abstract

The growth of internet and increase in multimedia applications has created significant challenges on the networks to support higher bandwidth and provide quality of service guarantees needs by this application.

Congestion, packet loss and delays in a network can adversely affect the Quality of Service for the multimedia applications. Therefore, mechanisms to manage bandwidth usage must be utilized to maximize the service quality.

Bandwidth management is a technique that allows the use of bandwidth to be protected or limited for a given class of applications. Using this technology guarantees adequate bandwidth is always available for critical applications while allowing non –critical application to compete for the remainder of this bandwidth.

In this research the researcher proposes bandwidth management algorithm that efficiently manages various kinds of user traffic by categorizing them into three classes according to the traffic priority and gives each class their needs in term of bandwidth. This algorithm is suitable for multimedia services because the reservation strategy make sure that sufficient bandwidth is always available for high priority service like multimedia application.

A program implemented to Test the efficient or failure of the suggested bandwidth management algorithm, using visual basic .net and Sql Server as programming language .the algorithm has been tested and the researcher finds that multimedia application has a good chance to deliver more packet than the lower priority application (best effort traffic).and also lower priority traffic has a chance to access the network, this indicate that each type of traffic takes its share in resource distribution.

ملخص البحث

التطور في الانترنت والزيادة في تطبيقات الوسائط المتعدده خلق تحديات واضحة بالنسبه للشبكات تتمثل فى توفير سعة نطاق واسعة وخدمه ذات جوده عاليه تتطلبها هذه التطبيقات .

الازدحام وتأخير وضياح الحزم فى الشبكه له تاثير سلبي فى نوعية الخدمه بالنسبه لتطبيقات الوسائط المتعدده مما يستوجب وجود ميكانيكيه لادارة استخدام سعة نطاق الشبكه لتحسين نوعية الخدمه .

ادارة سعة نطاق الخدمه عباره عن تقنيه تجعل استخدام سعة نطاق الشبكه محدد او محمى بالنسبه لتطبيقات معينه .

استخدام هذه التقنيه يضمن سعة نطاق كافيه دائما متوفره بالنسبه للتطبيقات الحرجه لسعة النطاق مع السماح للتطبيقات الغير حرجه لسعة النطاق بالتنافس على سعة النطاق المتبقية . فى هذا البحث قدم الباحث خوارزميه لادارة سعة النطاق التى تدير بصوره فعاله انواع مختلفه من طلبات المستخدمين وذلك بتصنيفها الى ثلاث مستويات اعتماداً على افضلية الطلب وتقوم بتوفير سعة النطاق اللازمه له .

هذه الخوارزميه مناسبه لتطبيقات الوسائط المتعدده وذلك لان استراتيجيه الحجز للخوارزميه هى ضمان توفير سعة نطاق كافيه للتطبيقات ذات الافضليه العاليه مثل برامج الوسائط المتعدده.

تم انشاء برنامج لاختبار فعاليه او فشل الخوارزميه المقترحه لادارة سعة النطاق باستخدام برنامج فيجوال بيسك دوت نت و SQL سيرفر . تم اختبار الخوارزميه ووجد الباحث ان تطبيقات الوسائط المتعدده لديها فرص اكبر لارسال عدد اكبر من الحزم اكثر من البرامج ذات الافضليه الاقل وايضا البرامج ذات الافضليه الاقل لديها فرصه للوصول الى الشبكه وهذه اشاره الى ان كل التطبيقات قات تاخذ نصيبها فى توزيع الموارد.

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