Tribhuvan University
Institute of Science and Technology

"Evaluation and Analysis of Connection Admission Control for QoS in WiMax networks"

Dissertation
Submitted to

Central Department of Computer Science and Information Technology
Kirtipur, Kathmandu, Nepal

In partial fulfillment of the requirements for the Master's Degree in Computer Science and Information Technology

by
Bharat Bdr. Kathayat
CDCSIT, TU
(2008-2010, Roll No.19)

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Student's Declaration

I hereby declare that I am the only author of this work and that no sources other than the listed here have been used in this work.

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Supervisor's Recommendation

I hereby recommend that this dissertation prepared under my supervision by **Mr. Bharat Bahadur Kathayat** entitled "**Evaluation and Analysis of Connection Admission Control for QoS in WiMax networks**" in partial fulfillment of the requirements for the degree of M. Sc. in Computer Science and Informatin Technology be processed for the evaluation.

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LETTER OF APPROVAL

We certify that we have read this dissertation and in our opinion it is satisfactory in the scope and quality as a dissertation in the partial fulfillment for the requirement of Masters Degree in Computer Science and Information Technology.

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Abstract

IEEE 802.16/WiMax is one of the emerging as well as promising wireless technologies. Although wireless technology like WiMax has many features such as mobility and cost effectiveness etc. but it also has the issue like limited resources and QoS that necessitate the better mechanism to provide the solution. Among the other mechanism Connection Admission Control is one of the effective mechanisms for better QoS in wireless network.

The main idea behind the connection admission control is to maintain the QoS in the WiMax networks. The algorithm of connection admission control works based on condition whenever condition is satisfied it accepts the request for new connection otherwise it rejects. In the wireless network like WiMax, distinct kinds of applications need distinct requirement of QoS that necessitate the CAC. This thesis presents the theoretical concept on the CAC in the WiMax networks for better QoS. This report also presents two different approaches proposed by the researchers and compares, evaluates and analyzes them on the base features of the algorithm and result obtained by the researchers. Finally shows some area for future work of the two approaches.

Keywords:

Quality of Service, Connection Admission Control, Adaptive Admission Control, Measurement based admission Control

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I have given my best to make this thesis work complete and error free. However, I am always looking forward to the suggestions from the readers which will improve this work.

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List of Abbreviation

PHY:	Physical Layer
SS:	Subscriber Station
LLC:	Logical Link Control
ATM:	Asynchronous Transmission Mode
MAC:	Medium Access Control
BE:	Best traffic
BWA:	Broadband Wireless Access
CAC:	Connection Admission Control
PMP:	Point to Multipoint
CPS:	Common Part Sub layer
DSA:	Dynamic Service Addition
BS:	Base station
CS:	Convergence Sub layer
CID:	Connection Identifier
rtPS:	Real time Polling Service
GSM:	Global System for Mobile Communications
DSD:	Dynamic Service Change
ITU:	International Telecommunication Union
QoS:	Quality of Service
nrtPS:	Non real time Polling Service
IEEE:	Institute of Electronic and Electronic Engineers
MSDU:	Medium access Control protocol data unit
UGS:	Unsolicited Grant service
DSD:	Dynamic Service Detection
LOS:	Line of Sight
MAC CPS:	Medium access control common part sub layer
NLOS:	Non-line of Sight

MAC SAP:	Medium Access Control Service Access Point
IETF:	Internet Engineering Task Force
MBAC:	Measurement Based admission control
WiMax:	Worldwide Interoperability for Microwave Access
PDU:	protocol data unite
M-LWDF:	Modified Largest Weighted Delay First
OFDMA:	Orthogonal Frequency Division Multiplexing access
OSI:	Open Systems Interconnection
VoIP:	Voice over Internet Protocol
OFDM:	Orthogonal Frequency Division Multiplexing
PSDU:	Protocol service data unite
SDU:	Service data unite