

CHAPTER I

INTRODUCTION

1.1 Introduction

Mobile communication devices like Laptops and PDAs become more and more popular. For easy communication between these devices as well as the connection to the Internet, Wireless LAN (IEEE 802.11) is used in a lot of scenarios today. Especially the number of WLANs in public facilities like railway stations, official buildings and airports increases rapidly, not taking into account all the small private "home" WLANs.

The increase in popularity of Wireless LANs led to more close considerations with respect to multimedia traffic over WLANs in the past. The most sensitive case of multimedia traffic is Internet telephony (Voice-over-IP). In particular the delay is most critical in Voice-over-IP (VoIP) applications.

1.2 Problem Statements

The two access methods used in 802.11 wireless LAN are Distributed Coordination Function (DCF) and Point Coordination Function (PCF). The 802.11 legacy DCF access mechanism does not support the concept of differentiating frames with different priorities. Basically, the DCF is supposed to provide a channel access with equal probabilities to all stations contending for the channel access in a distributed manner. However, equal access probabilities are not desirable among stations with different priority frames. The emerging Enhanced DCF (EDCF) is designed to provide differentiated, distributed channel accesses for frames with different priorities. EDCF is supposed to provide better performance enhancement for real time traffic as compared to DCF. Two questions which need to be answered are

- 1) How good is Enhanced DCF (EDCF) compared to DCF?
- 2) With EDCF, what are the maximum streams for individual traffic type and combination of various traffic types that can fulfil ITU-T requirements?

1.3 Project Objective

The objective of this project is to study the performance of Enhanced Distributed Coordination Function (EDCF) versus legacy Distributed Coordination Function (DCF) access mechanisms in IEEE 802.11 Wireless LANs. Another objective is to determine the maximum streams for individual traffic type and combination of various traffic types that can fulfill ITU-T requirements by using EDCF.

1.4 Scope of Project

In this project, the task focus on DCF access mechanism that is the basic of 802.11 MAC access protocol. The evaluation has been done on IEEE 802.11 mode for DCF and EDCF to study the performances of both modes. By using EDCF, the evaluation also has been done on each traffic type individually with different number of streams and under combination of various traffics type with different number of streams.