

무선 MAN 환경에서 Multi-hop Fixed Relay 도입에 따른 성능 개선과 비용 최적화 연구
A Study on Performance Improvement and Cost Minimization using Multi-hop Fixed
Relay Station in wireless MAN environment

최 고봉, 류 승완

중앙대학교 정보시스템학과

email: ca_ckb@hanmail.net, rush2384@cau.ac.kr

Abstract

Recently, much attention has been paid to Multi-hop relay (MR) networks for improvement of system capacity, extension of the coverage of a base station, and minimization of infrastructure cost in wireless communication environment such as cellular network and wireless MAN. In this paper, we propose several multi-hop relay architectures designed not only to improve system capacity but also to extend coverage of a BS. By considering a square and a hexagonal cell shapes, we designed multi-tier multi-hop wireless MAN architectures for metropolitan area cell shapes and rural area cell shapes respectively. In addition, we consider efficient frequency allocation algorithms among cells under these multi-hop network architectures to maximize the total system capacity. Through analytic modeling of such network architectures, we show that the proposed network architectures improve the system capacity and coverage of a BS compared to the original network architecture where only BS exists. The result also shows that the infrastructure cost can be greatly reduced with the proposed architecture compared to the BS only architecture.