

Abstract

Current CDMA cellular systems can provide multi-rate data services to satisfy users' requirements. These various data rates cause dynamic coverage ranges to mobile stations (MSs) in adaptive rate CDMA systems. Typically, the MS becomes a dead-spot station if it transmits data outside the coverage range. This work investigates the benefit of employing CDMA based two-hop relaying to alleviate this dead-spot problem. Our proposed relaying mechanisms can transmit data concurrently on both hops and only require one carrier frequency. No dedicated relay station is needed. The simulation results show that the proposed mechanisms can enhance the connectivity in the term of an average signal to interference ratio. The sensitivity analysis by varying the number of MSs indicates that the performance of the CDMA based two-hop relaying deteriorates when MSs locate densely in a cell.

Key words: Multi-hop, forwarder, dead spot, dynamic coverage range