

Implementation and Evaluation of the Effects of Dynamic Power Control on Operation-Time of a Mobile Terminal

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Abstract Most of our activities today are tied around being able to make a call or connect to the Internet with our Mobile devices. However, to optimally utilize the network and deliver the needed satisfaction to the user the mobile device needs to be powered. Sadly, most mobile devices are powered by energy-limited batteries, which impose a constraint on the mobile terminal optimal performance and on the network utility. As a result, special emphasis is now being laid on extending the battery life of mobile devices. In this work, we present a simple and effective power control algorithm, which conserves battery power by dynamically responding to real-time network conditions to adjust mobile terminal's transmit power. BER (bit error rate) in measurement reports obtained from signals received from the mobile terminal were used to estimate signal quality that helps to determine the network conditions and adjust mobile terminal's transmit power accordingly. Our algorithm was tested using simulation models, and our results were compared with the Stepwise algorithm, which is a popular power control algorithm in literature. A reasonable improvement was recorded for length of operation time and battery-energy saved for the mobile terminal over stepwise algorithm.