140. EFFICIENT DESIGN OF EMERGING WIRELESS POWERED COMMUNICATION NETWORKS BY OPPORTUNISTIC WET WITH WIT

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The energy constrained wireless powered communication networks are powered by fixed energy sources, such as batteries, which have limited operational time and it can be extended by replacing or recharging the batteries, it may be costly, dangerous, inconvenient or impossible. As an Alternative solution to prolong the network's lifetime, energy harvesting has recently introduced. Since it potentially gives unlimited power supplies to wireless powered communication networks by harvesting energy from the environment using harvest-then transmit protocol. This implies an interesting doubly near-far problem due to both the DL and UL distance dependent signal attenuation. Thus resulting in unfair rate allocation among different nodes. To overcome this problem, we propose a new performance metric is called RF-MAC protocol, which should be allocate equal rate to all nodes regardless of their distances. The RF-MAC protocol provides trade-off between energy transfer and data transfer. This data transfer requires a perspective on medium access control (MAC) protocol design for sharing the channel. The MAC protocol explains how the placement and number of the RF energy nodes impact the sensor charging time. These are used to design a MAC protocol called as RF-MAC that optimizes energy delivery to sensor nodes, while minimizing disruption to data transfer. It shown to achieve the maximum network throughput upto 0.98 Mbps with thousand number of nodes and also maintain constant energy consumption. Finally, simulation results have shown the effectiveness of the RF-MAC protocol for solving the doubly near-far problem in wireless powered communication networks.

Index Terms: RF-MAC protocol, Energy transfer, CSMA, Data transfer, Energy Efficiency and Throughput maximization.

ISBN 978-81-904760-6-5