

Energy-Efficient transmission strategies with multiple radios in cognitive radio:

Beyond rendezvous

Montejo-Sanchez, Samuel

Azurdia-Meza, Cesar

Aranda-Cubillo, Jaime

Souza, Richard Demo

Fernandez, Evelio M.Garcia

Soto, Ismael

© 2018 IEEE. Cognitive radio (CR) has emerged as a key technology to deal with the frequency spectrum scarcity. The efficient and opportunistic use of the spectrum requires rapid coordination between the secondary users (SUs). Besides, future wireless networks demand even faster transmission rates, smaller end-to-end delay, and greater energy efficiency. In this work we propose two transmission strategies for SUs equipped with two radios, one of them uses both radios for data transfer while the other uses one radio for continuous detection of available channels. We evaluate the performance of the proposed strategies as a function of multiple system parameters. Our results indicate that both proposed strategies increase energy efficiency and decrease the delay between SUs. Besides, numerical results show that in scenarios with low primary activity the best choice is the strategy based on parallel transmission, while in scenarios with high primary activity the best choice is the strateg