Multi-Hop File Transfer in WiFi Direct based Cognitive Radio Network for Cloud Back-up

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Abstract:
In this chapter, an application for Android WiFi Direct multi-hop communications with log-file generation and cloud-based back-up have been proposed. WiFi Direct technology is used to peer-to-peer files transfer between neighboring devices without going through any access point. Distributed file systems for the cloud is a system that enables users to have access to the same data or file remotely (any-time any-where). The proposed custom WiFi Direct based Cognitive Radio (CR) application is able to create an ad-hoc network for multi-hop file transfer wirelessly using WiFi between two or more devices. Be-sides, to customize the channel according to the user demand, CR technique is used. An application (apps) is developed and used in mobile devices (smart phones, note book, etc) in a testbed to verify the system performances. This ap-plication detects and saves all the network activities information (in terms of log file) to keep track of the user activity and connection details in the network. The generated log files are stored in the cloud for further processing and security purpose. The performance of WiFi Direct based CR discovery service, channel detection, log file generation, multi-hop communication and WiFi Direct applications were successfully tested intensively with ~ 93% efficiency. Based on experimental data, an empirical model for multi-hop communication is proposed and validated. This shows, multi-hop file transfer and cloud back-up of log-file are possible through neighbor nodes having WiFi direct connection in a network. This can be helpful for data safety, recovery and connection status monitoring/analysis for possible intrusion detection.

Keywords : : WiFi direct; Cloud storage; Cognitive Radio; Multi-hop file transfer; Cloud back-up

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