Abstract

Wireless networks have biggest constraint of limited bandwidth in comparison to wired networks but in spite of this constraint wireless networks are becoming popular day by day on account of their flexibility, mobility as well as inexpensive physical medium (air). This paper aims to simulate wireless local area network. The performance of the network is evaluated using optimized network engineering tool, OPNET 14.5 modeler, over four major physical layer technologies Infra-Red, Direct Sequence Spread Spectrum DSSS, Frequency Hopping Spread Spectrum FHSS and Orthogonal Frequency Division Multiplexing OFDM at multiple transmission rates, 1Mbps, 2Mbps, 5.5Mbps, 11Mbps, 36Mbps, 48Mbps, 54Mbps. DSSS can use 1, 2, 5.5 Mbps rates. FHSS and IR are able to operate at 1 or 2 Mbps rates, while OFDM is capable to operate at 6, 9, 11, 36, 48 or 54 Mbps rate. A trade-off exists between the selected data rate and the physical technology. It is founded that at some transmission rate, the OFDM technology delay is better than in DSSS. FHSS delay is less than DSSS delay. IR delay is better than FHSS and DSSS delay. In addition, for one physical layer technology the delay can be reduced by increasing the transmission rate of the channel.

References

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Evaluating the Performance of Wireless Network using OPNET Modeler

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Index Terms

Computer Science

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Keywords

Wireless LAN  IEEE 802.11 OPNET