Abstract

In wireless environments, improper handover among mobile terminals can occur during micromobility due to various reasons. Once this takes place, the network Quality of Service (QoS) experiences degradation thereby increasing the call drop rate, creating latency problems and decreasing throughput. In such scenario, there is an urgent need to optimize network performance while utilizing network resources efficiently. Interestingly, various pathloss methods have been recently proposed to achieve relative network performance but these methods have high complexity and are cost effective. This work applied Hata model in spatial micromobility environment to evaluate the performance of mobile wireless access within WiFi and WiMax infrastructures. The work used Addax-Sinopec petroleum, a drilled deep exploratory oil well in Izoembe, Oguta Local Government area situated in the south eastern part of Nigeria as a study testbed. From the testbed, technical data were collected for both a dedicated WiFi hotspot and Globacom WiMax infrastructure. The Wifi Tiplink access point, WiMax Distributed Control System (DCS) and a wireless router were all configured for the initial pathloss experimentation. MATLAB Script was developed for evaluation purposes considering the
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testbed. The results of the comparison show that WiMax offered a lower pathloss value compared with Wi-Fi network WiMax (IEEE 802.16). This makes WiMax optimal for wireless access communication with advantages such as being flexible, having long range, and offering high data capability.

References

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Index Terms

Computer Science

Wireless
Keywords

Wifi, WiMax, Mobility, Pathloss, QoS, Signal Degradation, Latency, Call drop rate