Comparative Performance Analysis of DSDV, DSR and OLSR Routing Protocols to Determine the Best Suited Routing Approach through Simulation in Mobile WiMAX Network

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Abstract

Worldwide Interoperability for Microwave Access (WiMAX) is one of the most efficient and well known area based networking system that provide fixed, and more newly, mobile broadband connectivity between fixed and mobile network access in a define coverage areas. There are a large number of research works that have been conducted to measure the performance of WiMAX network using different ad-hoc routing protocols. Most of them are concerned only about the protocols and how they work in WiMAX networks. There are no such comparisons purely based on the nature of protocols, whether they are reactive or proactive, or distance vector or link state. If the most suited approach of routing can be determined, research area can be narrowed to that particular approach. In this paper, four different protocols are taken, namely, Destination Sequence Distance Vector (DSDV) routing protocol, which is a proactive distance vector routing protocol; Dynamic Source Routing (DSR), which is a reactive distance vector protocol; Optimized Link State Routing Protocol (OLSR), which is a proactive link state routing protocol. For simulation of WiMAX network, Network Simulator- 3 (NS-3) simulation
software in Linux environment is used. For measuring and comparing performances of the protocols, primarily Packet Delivery Ratio, Throughput, End-to-End Delay, Normalized Routing overhead, Number of dropped data packets have been used. Results of simulation shows that, OLSR, as well as, Proactive Link State routing approach outperform other two approaches in simulated WiMAX network. Then also tried to improve the performance of WiMAX by analyzing the network with and without mobility.

References

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Keywords

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