

Data Envelopment Analysis: Efficient Technique for Measuring Performance of Wireless Network Coding Protocols

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Abstract— Performance of network coding protocols have been largely evaluated using metrics such as packet delivery ratio and routing load, which can only determined how effective a protocol is. We describe the process of routing information in wireless network based on network coding and evaluate the efficiency of throughput benefits that network coding offers. This is archived with a specialized method known as data envelopment analysis (DEA). As a result, efficiency of COPE performance is compared with the traditional IEEE802.11. In additional, decision making unit called DMUs of protocols are determined. This could assist network designer to better plan for optimum benefits. Simulation results show that for all network scenarios examined, COPE protocol performs better than IEEE802.11 in terms of network effectiveness but its performance in terms of network efficiency depends on both inputs and outputs values.

Keyword— Data envelopment analysis, COPE protocols, IEEE802.11, network efficiency.

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