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THROUGHPUT ENHANCEMENT OF IEEE802.11N/AC IN DIFFERENT ENVIRONMENTS USING PHYSICAL ISOLATION AND ANTENNA SOPHISTICATION APPROACHES

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ABSTRACT

One of the major issues in WLAN is the changes of physical environment and the best technology is not the latest one for indoor or outdoor environment installation. The signal strength can be reducing over distance and across or through radio frequency obstructions and it is not clear if the high-predicted throughputs are achievable even in the absence of interference. Objectives for this research are to design an approaches to enhance throughput of wireless network IEEE802.11n/ac in different environments, to implement physical isolation and antenna sophistication approaches in both IEEE 802.11n/ac and to evaluate performance analysis of wireless network IEEE802.11n/ac in an indoor and outdoor environments. This research have been implement wireless network IEEE802.11n/ac testbed in the indoor and outdoor environment with network benchmarking tools like Jperf-2.0.2 to obtain all data needed. Throughput will be measured as the experiment run on both technologies. The results show that 802.11ac is much better than 802.11n in both environments. Hence, by implementing these two approaches, it can reduce the loss of throughput. These performance improvements are sensitive to channel conditions, with the achieved data rates rapidly declining as the distance between the transmitter and the receiver is increased. An approach is proven can enhance throughput in the indoor and outdoor environments.

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INTRODUCTION

1.1   BACKGROUND OF STUDY

Nowadays, wireless networks rapidly growth where it's providing Internet access and services for both mobile and stationary users. In addition, with increasing demand of wireless LANs, higher data rates are required. According to Khanduri and Rattan (2013), Wireless Local Area Network (WLAN) is based on IEEE 802.11 standard also known as Wireless Fidelity (Wi-Fi). There are several well-known standards of IEEE 802.11 which are IEEE 802.11a, IEEE 802.11b, IEEE 802.11g, and IEEE 802.11n. Many customers changed older networks to meet new standards due to positive acceptance of IEEE 802.11n Wi-Fi in the enterprise (Fadilah, Shibghatullah, Abas, Wahab, and Hashim, 2014). The figure below show the number of global internet users per year since 1993 until 2014.
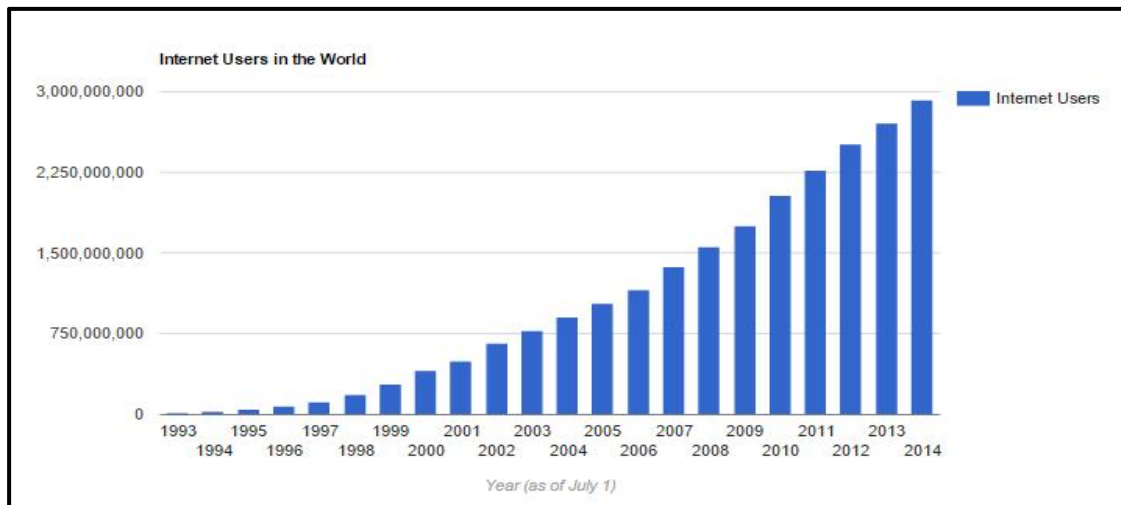

Figure 1.1: The Number of Global Internet Users per year since 1993 until 2014
(internetlivestats.com, 2015)