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END TO END PERFORMANCE ANALYSIS OVER IP RAN NETWORK

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ABSTRACT

As mobile networks evolve, increased attention is given to transport in the Radio Access Network (RAN). Moreover, mobile backhaul network will inevitably transform to an IP RAN as mobile networks move towards IP and broadband. In order to keep pace with the growth, "IP" RAN network were introduced to replace the current ATM connection at the IuB interface. With the additional header compression and packet multiplexing technologies, IP networks provide higher efficiency than ATM. However ATM continues to be a popular choice by telecommunication companies and service providers because of the ability to provision Peak Cell Rates (PCR) to specific Virtual Circuits (VC) and at the same times provide bandwidth guarantees. Due to that functionality, ATM makes a good choice for a network that must handle both traditional high-speed data (e.g. File transfer), and real time, low latency content such as voice and video. IP RAN however takes the advantage of dynamic routing protocols which allow routing to occur and the network can 'self-heal' and find alternate paths to a destination if there is one when a node fails. Since IP is best effort, there is no guaranteed of delivery and packets might be dropped. In order to compare the end to end performance for both IP RAN and ATM network, various types of traffic such as MMS (Scenario 1), HTTP Connection (Scenario 2) and FTP downloading (Scenario 3) are chosen and analyzed. The expected result from the test experiment is able to produce set of information such as uplink and downlink duration time, throughput downlink pattern comparison, bytes received comparison and data transfer time taken. Based on the analysis result, end to end performance of IP RAN networks were better in term of throughput downlink and time duration especially during huge traffic load (peak hour). For future research, similar scientific analysis will be deploy on Long Term Evolution Network (4G) which is focusing on scheduling algorithms in different traffic conditions such as VoIP and Mix Traffic (Web Browsing, FTP & Steaming).

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