DUBLIN CITY UNIVERSITY

ELECTRONIC AND COMPUTER ENGINEERING

Title

Subtitle

Author

Michael Lenehan michael.lenehan4@mail.dcu.ie

Student Number: 15410402

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Abstract

Contents

1 Introduction

2 Part 1: Data Transmission over the WiFi Network

2.1 Question A:

2.1.1 Part 1:

Within the wifi-example-sim.cc file, the simulation is given a run time of 20 seconds, a packet size of 1000 bytes and a 0.05 second delay between the transmission of packets. This corresponds to a total of 400 packets sent over the space of 20 seconds.

$$
\begin{aligned}
R &= \frac{rxPackets * packetSize * 8}{txTime} \\
&\frac{400 * 1000 * 8}{20} \\
&\frac{3,200,000}{20} \\
&1,600,000 \\
&1,600Kbps
\end{aligned}
$$

Equation 1: Bitrate of Data Traffic (Kbps)

$$test$$

Equation 2: Average Throughput (Kbps)

Delay time is given within the wifi-example-sim.cc file as measured in nanoseconds. Form the output, this value is 490381ns. This can be calculated as follows:

$$
\begin{aligned}
\overline{delay} &= \frac{delaySum}{rxPackets} \\
&\frac{196,152,732}{400} \\
&= \quad 490,381.83ns \\
&= \quad 4.9 \times 10^{-4}s
\end{aligned}
$$

Equation 3: Average Delay (s)

$$PLR = \frac{lostPackets}{rxPackets + lostPackets0}$$
$$\frac{0}{400+0}$$
$$= \quad 0$$

Equation 4: Average Packet Loss Ratio

2.1.2 Part 2:

$$test$$

Equation 5: Bitrate of Data Traffic (Kbps)

$$test$$

Equation 6: Average Throughput (Kbps

$$test$$

Equation 7: Average Delay (s)

$$test$$

Equation 8: Average Packet Loss Ratio

2.2 Question B:

2.3 Question C:

2.3.1 Part 1:

$$test$$

Equation 9: Average Throuhgput (Kbps)

$$test$$

Equation 10: Average Delay (s)

test

Equation 11: Average Packet Loss Ratio

2.3.2 Part 2:

2.3.3 Part 3:

3 Part 2: Results and Comparison and Analysis

4 Conclusion