UNIVERSITI TEKNOLOGI MARA

INVESTIGATION OF MESSAGE QUEUING TELEMETRY TRANSPORT IN TERM OF BANDWIDTH EFFICIENT IN INTERNET OF THING

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Dissertation submitted in partial
fulfillment of the requirements
for the degree of **Master of Science**
(Computer Networking)

Faculty of Computer and Mathematical Sciences

January 2020

ABSTRACT

Message Queuing Telemetry Transport (MQTT) is a transmission protocol used in IoT technology. MQTT become more havoc day by day since people are accepting the use of IoT devices for numerous internal or external purpose of business and lifestyle. The closeness war between other existing IoT protocol such as HTTP and CoAP has caused a possibility and questioned which whom is better amongst them. Unlike HTTP, it often used on website while CoAP more likely wide known in IoT devices id the real deal where between CoAP and MQTT who is better. The problem is MQTT a reliable and bandwidth efficient protocol as people already knows. The full performance analysis is one by considering into account the specific testing and scenarios between three devices which involving broker, arduino and raspberry pi. Therefore, transmission of temperature and humidity between clients cross over the broker is carried out and analysis by monitoring Wireshark in order to clarify the MQTT bandwidth efficient problem. This research is conducted by suing python environment and the network topology used in this research is bus topology. This research studied the traffic received and sent by protocol and bandwidth management. The findings summarized that MQTT is right helps data sent to other devices in least bandwidth consumption even though there is interference at end-to-end delay in sending the data packet.

ACKNOWLEDGEMENT

Alhamdulillah, to Allah all praises and thanks. Because of His Almighty for giving me the strength and His utmost blessings, I was able to complete this research work within the time duration given.

I would like to take this opportunity to express my sincere and heartiest gratitude to my honorable dissertation supervisor Dr. Siti Arpah Ahmad, Senior Lecturer, Faculty of Computer and Mathematical Science, MARA University of Technology (UiTM) Shah Alam for his continuous motivation, guidance and encouragement which helped me throughout the time of my research work. Thank you for all the constructive comments and consultation that nothing is comparable to his keen advice and the freedom he provided for me in research. I am grateful to him for his cooperation throughout my dissertation work.

I would like to thank all the board of examiners for their precious time in understanding my work and their insightful comments. I am thankful for given a motivated and experienced lecturers in giving me guidance and encouragement to complete this research work.

I would like to express my deepest appreciation to all of my friends for their full support and I could not have done this alone without them being really helpful to me. At last, I am grateful to my family for their continuous supports and cooperation.

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CHAPTER ONE

INTRODUCTION

1.1 Research Background

Today, everything needs an Internet. Whoever they are, people use an Internet in all aspect of living things such as communication, transportation, connection and so on. Even children under age nowadays is introduced with this kind of Internet which is probably through online education, games or social media. With aid of Internet, many good changes are happened on the Industrial management and system until our era is known as Industry 4.0. This is the latest revolution that implemented internet in the industry (Atmoko, 2018). It is similar with Internet of Things (IoT) that widely used by everyone and everywhere. Even though, what is IoT exactly? According to Poongothai (2018), IoT is defined as a platform that devices is allowed to connected, sensed as well as controlled by remote over network. Next, according to (Su, Chen, & Chen, 2019), IoT can be said as devices or things that fetch data to sinks for further processing using exchange protocol such as Message Queue Telemetry Transport (MQTT). Another scholar resource, IoT is stated as the everything that completed with power supply, connectivity to Internet and sensor capability making a field by Kodali & Mahesh (2016). It is quite similar to this scholar resource where according to Bonifaz et al. (2018), IoT is interconnection of devices, resource accessible on cloud and communication between different developers.

There are fundamental criteria that need to take care in IoT is home sensor network and its power supply in order to maintain the system operation (Yang, Yang, & Sung 2017) and the challenge nowadays is IoT itself became popular thing where it might giving an access to control home appliances with a single touch or click or it might be one of the cause that hacker easily attack the house virtually (Rehman & Gruhn 2018).