

**UNIVERSITI TEKNOLOGI MARA**

**MANAGEMENT OF NETWORK  
VIRTUALIZATION IN LTE  
NETWORK COMMUNICATION**

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## ABSTRACT

In this new era of data communication, the needed of data usage is increasing dramatically since a last decade. As estimated, it is more than a billion of smart phone, tablet and various type of communication peripherals are being use worldwide nowadays. Also, those figure is predicted to double or triple in the next four to five years, thus the usage is dramatically every single years. In such a highly demanded of data usage of the mobile network, it is the practical time to apply the usage of Network Virtualization (NV) which is enables multiple Network operators to share a common access, core and transport network. It's even share a common network infrastructure. From one Mobile Network Operator (MNO), it can be added to more than one Mobile Virtual Networks Operators (MVNO) to fulfill the highly demanded of data communication. Thus, applying the Virtualized Network Technology will reducing the cost of the infrastructure while increasing the capability and overall performance of the network itself. This paper is targeting to study the potential of implementing networks virtualization in LTE networks. Furthermore, this paper also research on Load Balancing (LB) which is a concept used in mobile networks to offload network traffic from high-load to low-load within network provider / operators. However, research target is to applying the Network Virtualization in LTE and compare it with the Load Balance scheme gain. The performance of both technology will be measure and compare using several of application such as VoIP, FTP, and HTTP. The goal is to show the benefit of it can be taken to LTE networks.

*Keywords— MVNO, Network Virtualization, Load Balance*

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## **CHAPTER 1**

### **INTRODUCTION**

#### **1.1 OVERVIEW**

Mobile Network Virtualization (NV) is a technique which has drawn progressively research attention. Network Virtualization empowers multiple network operators to share a common infrastructure in order to reduce the investment capital while enhancing performance at the same time [1]. Since networks virtualization empowers abstraction and sharing of network infrastructure and radio spectrum resources, the general costs of wireless network development, deployment and operation can be decreased significantly. Also, network virtualization can give easier migration to more up to date items products, innovations or technology by disengaging a system's portion.

#### **1.2 LTE TECHNOLOGY**

Long Term Evolution also known as LTE had been started as a project in 2004 by the Telecommunication Organization which is Third Party Partnership Project (3GPP). System Architecture Evolution (SAE) is the improvement of the previous technology which is GPRS / 3G. Terminology of LTE is to present both combination of the Long Term Evolution (LTE) & System Architecture Evolution (SAE) .