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Han-Chuan Hsieh, Jiann-Liang Chen, Abderrahim Benslimane

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5G Virtualized Multi-access Edge Computing Platform for IoT Applications

Han-Chuan Hsieh[a], Jiann-Liang Chen[a] and Abderrahim Benslimane[b]
[a]Department of Electrical Engineering, National Taiwan University of Science & Technology, Taipei, Taiwan
(D10007501@mail.ntust.edu.tw)
[b]Department of Computer Science, University of Avignon, France
(abderrahim.benslimane@univ-avignon.fr)

Abstract- The next generation of fifth generation (5G) network, which is implemented using Virtualized Multi-access Edge Computing (vMEC), Network Function Virtualization (NFV) and Software Defined Networking (SDN) technologies, is a flexible and resilient network that supports various Internet of Things (IoT) devices. While NFV provides flexibility by allowing network functions to be dynamically deployed and inter-connected, vMEC provides intelligence at the edge of the mobile network reduces latency and increases the available capacity. With the diverse development of networking applications, the proposed vMEC use of Container-based Virtualization Technology (CVT) as gateway with IoT devices for flow control mechanism in scheduling and analysis methods will effectively increase the application Quality of Service (QoS). In this work, the proposed IoT gateway is analyzed. The combined effect of simultaneously deploying Virtual Network Functions (VNFs) and vMEC applications on a single network infrastructure, and critically in effecting exhibits low latency, high bandwidth and agility that will be able to connect large scale of devices. The proposed platform efficiently exploiting resources from edge computing and cloud computing, and takes IoT applications that adapt to network conditions to degrade an average 30% of end to end network latency.

Keywords- Virtualized Multi-access Edge Computing (vMEC) , Network Function Virtualization (NFV), Container-based Virtualization Technology (CVT), Software Defined Networking (SDN), Internet of Things (IoT), Virtual Network Function (VNF)

1. Introduction

The development of fifth generation (5G) mobile communication systems enables the integration of mobile devices and Internet of Things (IoT) applications on larger-scale sensor networks [1]. 5G is a collective name for technologies and methods enable support future networks that satisfy extreme capacity and performance demands. The communications industry aspires to meet the low-latency and gigabit throughput expectations to users of 5G. 5G provides optimized control

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