A Comprehensive Survey on QoS-aware Service Placement Algorithm on Fog Cluster in an Edge Computing Environment

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Abstract: *Cloud computing comes with several inherent capabilities such as scalability, on-demand resource allocation, reduced management efforts, flexible pricing model and service provisioning.The distance between the cloud and the end devices might be an issue for latency sensitive applications such as disaster management and content delivery applications.The fog being closer to the end user is more vulnerable than the cloud.So, Fog is "Cloud closer to ground" and in the fog computing, processing of some application components can take place at the edge of the network while others can happen in the cloud.Fog computing is an epitome to enable provisioning resources and services beyond the cloud, at the edge of the network, and nearer to end devices.For this reason, in this paper, planned for to proposingarchitecture for Quality of Service (QoS) aware fog service provisioning, which allows scheduling the execution of IoT applications tasks on a cluster of fog nodes.Next, step is to analyzetwo fog-based frameworks, FogPlan and FogOffload that can improve the QoS in terms of the reduced service delay. This paper also determines the impact of those security issues and possible solutions, providing future security relevant directions to those responsible for designing, developing, and maintaining Fog system. Results demonstrate that theproposed algorithm achieves significant improvement in terms of service latency and execution cost compared to simulator's built-in policies.*

Keywords: **Cloud Computing, Internet of Things (IoT),Fog computing, Quality of Service (QoS), FogPlan, and FogOffload.**

1. INTRODUCTION

The recent advances in the Internet of Things (IoT), Big Data, and Machine Learning (ML) have contributed to the rise of a growing number of complex and intelligent applications.Examples of such applications are real-time disease detection, self-driving vehicles, drone package delivery, and smart manufacturing. These emerging applications are often real time, data-intensive, and delay-sensitive, and ensuring Quality of Service (QoS) for these applications is a challenge. Fog computing is seen as one promising solution for providing QoS for these applications, as it puts compute, storage, and networking resources closer to the user.However, the fog provides some advantages,