ISSN 2319 - 5951

Volume 13, No.1, December 2023 – January 2024
International Journal of Networks and Systems
Available Online at http://www.warse.org/IJNS/static/pdf/file/ijns021312024.pdf
https://doi.org/10.30534/ijns/2024/021312024

5G's Integration with Edge Computing

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Received Date : November 20, 2023 Accepted Date : December 13, 2023 Published Date : January 07, 2024

ABSTRACT

This study addresses the transformative integration of 5G networks with Edge Computing and Mobile Edge Computing (MEC) and explores the collaborative standards established by industry associations such as ETSI and 3GPP. The article explores the multiple possibilities of this integration, encompassing consumer and operator services, and meeting the demands of new technologies such as augmented reality, virtual reality and the Internet of Things. The strategic coexistence of distributed MEC is explored, while the security and privacy challenges of MEC are explored, emphasizing layered security and blockchain technologies. The study highlights the role of 5G and MEC in reshaping the communications landscape, providing affordable and efficient computing at the network edge, and improving network performance and quality of experience (QoE). As the 5G and MEC ecosystem evolves, the paper predicts a transformative impact on connectivity, speed, reliability and responsiveness across industries, and emphasizes the continued importance of research and development in shaping the future of communications and computing.

Key words : 5G, Edge Computing, Internet of Things, Mobile Edge Computing, Network.

1. INTRODUCTION

Edge computing is a computing paradigm that enables edge servers in mini-clouds (or edge clouds). Extend cloud operations at the network edge to perform computationally demanding tasks and store massive amounts of data close to user equipment (UE). 1]–[3] . Traditional cloud computing, which is a centralized computing paradigm that provides continuous access to high-performance data centers approved to allow user devices to offload computing and storage space to data centers [4]. This is because user devices have limited processing, data processing and storage capabilities. Edge computing continues to be promoted as a top requirement for next-generation applications such as augmented reality and virtual wireless interactive communications. These highly interactive applications are computationally intensive and have high quality of service (QoS) requirements, including low latency and high performance (eg. ultra-reliable low-latency data transfer (URLLC), touch screen) [5]–[7]. Most importantly, these applications are expected to generate massive amounts of data, up to 30.6 exabytes per month [8]. The limited number of UE Limited Warranty options need to receive and store massive amounts of real-time data, process, compute and analyze the data, and make and distribute mini-cloud-based decisions locally. Therefore, mini-clouds of edge servers are functions of the cloud but at a different scale and are instead located locally in remote data centers that may be located far from the user's devices[9]. This white paper describes the evolution of edge computing. In 5G Some analyzes were performed on 5G-specific computing platforms. Especially mobile edge computing (MEC) [10], [11]. Also [12], [13] discuss laterality and its related issues in 5G environment and MEC architecture. [14] provides an overview of edge computing, including key applications and challenges from the perspective of traffic networks. Our role is first. Currently: Raw computer classification in the field of 5G Objectives, software platform, objects; Using 5G technology, performance measurement, performance computer screen; Cross-sectional assessment of how 5G data processing; Public reasons for the research project. This project is timely due to the arrival of 5G and the growing use of edge computing.

2. BACKGROUND

This part provides an overview of 5G, and computing technology and MEC.

2.1 Requirements of 5G Systems

The advent of 5G technology represents a significant leap in connectivity, promising incomparable speed, minimal latency and expanded capabilities in various applications. The success of 5G systems is based on several key requirements that support their functionality. First, 5G systems are expected to deliver high data rates, facilitating seamless experiences in applications such as augmented reality and high-definition video streaming. In addition, the very low latency of 5G,

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