A LITERATURE ANALYSIS ON 5G TECHNOLOGY

Nayana V[1], Milu Hanna Mathew[2], Dr. RReka[3]
[1,2]IV –BE-CSE, [3]Professor & Head/CSE,
Annai Mathammal Sheela Engineering College, Erumapatty, Namakkal, Tamilnadu.

ABSTRACT

5G Technology stands for 5th Generation Mobile technology. 5G mobile technology has changed the means to use cell phones within very high bandwidth. 5G technology including camera, MP3 recording, video player, large phone dialing speed, audio player and much more you never imagine. The advanced billing interfaces of 5G technology makes it more attractive and effective.5G technology also providing subscriber supervision tools for fast action.

1. INTRODUCTION

5G mobile telecommunication standards stand for fifth-generation advancements made in the mobile communications field. These comprise packet switched wireless systems using Orthogonal Frequency Division Multiplexing (OFDM) with wide area coverage, high throughput at millimeter waves (10 mm to 1 mm) covering a frequency range of 30 GHz to 300 GHz, and enabling a 20 Mbps data rate to distances up to 2 km. The millimeter-wave band is the most effective solution to the recent surge in wireless Internet usage. a highly flexible network (flexible channel bandwidth between 5 and 20 MHz, optimally up to 40 MHz), and dynamic ad-hoc wireless network (DAWN). This technique employs intelligent antennae (e.g., switched beam antennae and adaptive array antennae) and the flexible modulation method, which helps in obtaining bidirectional high bandwidth, i.e., transfer of a large volume of broadcasting data in giga bytes, sustaining more than 60,000 connections and providing 25 Mbps connectivity.

2. LITERATURE SURVEY

Farris [1] et.al. said that, The Internet of Things (IoT) ecosystem is evolving towards the deployment of integrated environments, wherein heterogeneous devices pool their capacities together to match wide-ranging user and service requirements. As a consequence, solutions for efficient and synergistic cooperation among objects acquire great relevance. Along this line, this paper focuses on the adoption of the promising MIFaaS (Mobile-IoT-Federation-as-a-Service) paradigm to support delay-sensitive applications for high-end IoT devices in next-to-come fifth generation (5G) environments. MIFaaS fosters the provisioning of IoT services and applications with low-latency requirements by leveraging cooperation among private/public clouds of IoT objects at the edge of the network. A performance assessment of the MIFaaS paradigm in a cellular 5G environment based on both Long Term Evolution (LTE) and the recent Narrowband IoT (NB-IoT) is presented. Obtained results demonstrate that the proposed solution outperforms classic approaches, highlighting significant benefits derived from the joint use of LTE and NB-IoT bandwidths in terms of increased number of successfully delivered.

Bego Blanco [2] et.al. discusses current standardization situation of 5G and the role network softwarization plays in order to address the challenges the new generation of mobile networks must face. This paper surveys recent documentation from the main stakeholders to pick out the use cases, scenarios and emerging vertical sectors that will be enabled by 5G technologies, and to identify future high-level service requirements. Driven by those service requirements 5G systems will support diverse radio access technology scenarios, meet end-to-

end user experienced requirements and provide capability of flexible network deployment and efficient operations.

Rupendra NathMitra [3] et.al. discussed, all new 5G expected to be operational by 2020. This time, it is therefore crucial to know the direction of research and developments enabling 5G technology. This paper provides an inclusive and comprehensive analysis of recent developmental endeavors toward 5G. It highlights salient features, i.e., flexibility, accessibility, and cloud-based service offerings; those are going to ensure the futuristic mobile communication technology as the dominant protocol for global communication.

Erik Dahlman [4] et al. analyzed details of the new 5G radio-access technology to be developed by 3GPP. It begins with a discussion of some key design principles that needs to be followed in order to ensure a high performance, flexible, and future proof air interface. It then goes more into the details on the key 5G technology components including but not limited to duplex arrangement, 5G waveform, massive MIMO, multi-site connectivity, flexible system plane, and access/backhaul integration.

ZoraidaFrias [5] et.al, proposes that being still under development, it is envisaged that 5G networks will provide a 'fibre-like' experience to mobile users. As such, they are expected to accommodate services with very different requirements in terms of latency, bandwidth and reliability, among others, for the vertical sectors. However, the European Union has just approved the Telecommunications Single Market Regulation, which enshrines the network neutrality principle and guarantees that '*all traffic through the Internet is treated equally*'. This article explores the potential conflict between net neutrality regulation and future 5G services, particularly regarding network virtualization. We present a discussion on the challenges of building net neutrality upon judgments on whether traffic optimization is objectively necessary. This proves complex in a technological environment that envisions network '*slices'* created and priced on-demand according to the Quality of Service (QoS) required by specific applications at any given time. In addition, we argue that the 'anything-as-a-service' paradigm might turn into an important source of innovation for the future Internet infrastructure layer, and thus for the ecosystem as a whole.

Shahid Mumtaz [6] et.al. research on 5th Generation (5G) network has come across a large development in the recent years. Several enabling technologies are being explored for the 5G mobile system era. The aim is to evolve a cellular network that is intrinsically flexible and remarkably pushes forward the limits of legacy mobile systems across all dimensions of performance metrics. All the stakeholders, such as regulatory bodies, standardization authorities, industrial fora, mobile operators and vendors, must work in unison to bring 5G to fruition. In this paper, we aggregate the 5G-related information coming from the several stakeholders, in order to i) have a comprehensive overview of 5G and ii) to provide a survey of the envisioned 5G technologies; and their development thus far from the perspective of those stakeholders that will open up new frontiers of services and applications for next-generation wireless networks.

Ian F.Akyildiz [7] et.al. stated the fifth generation (5G) mobile communication networks will require a major paradigm shift to satisfy the increasing demand for higher data rates, lower network latencies, better energy efficiency, and reliable ubiquitous connectivity. With prediction of the advent of 5G systems in the near future, many efforts and revolutionary ideas have been proposed and explored around the world. The major technological breakthroughs that will bring renaissance to wireless communication networks include (1) a wireless software-defined network, (2) network function virtualization, (3) millimeter wave spectrum, (4) massive MIMO, (5) network ultra-densification, (6) big data and mobile cloud computing, (7) scalable Internet of Things, (8) device-to-device connectivity with high mobility, (9) green communications, and (10) new radio access techniques. In this paper, the state-of-the-art and the potentials of these ten enabling technologies are extensively surveyed. Furthermore, the challenges and limitations for each technology are treated in depth, while the possible solutions are highlighted.

Carolina Fortuna [8] et.al. discussed 5G Machine Type Communication (MTC) networks will be formed of dense, heterogeneous clusters of wireless devices serving different application verticals, such as urban service enablers, body

area networks, industrial and home automation and entertainment. They will use a large number of existing and emerging wireless technologies served by advanced 5G gateways or Internet of Things eNodeBs and controlled through software interfaces by control and application programs, reducing the need for on-site, manual reconfigurations. In this paper, we focus on the software interfaces that enable the control of 5G MTC networks and propose a functional split of upstream and downstream functions. We show similarities with Application Programming Interface (API) development in Object-Oriented (OO) languages and with Representation State Transfer (RESTful) principles. We provide a reference implementation using Restful functionality and an example control application that performs localization.

Pablo Salvia-Garcia [9] et.al. tells that Ultra-High-Definition (UHD) video applications such as streaming are envisioned as a main driver for the emerging Fifth Generation (5G) mobile networks being developed worldwide. This paper focuses on addressing a major technical challenge in meeting UHD users' growing expectation for continuous high-quality video delivery in 5G hotspots where congestion is commonplace to occur. A novel 5G-UHD framework is proposed towards achieving adaptive video streaming in this demanding scenario to pave the way for self-optimization oriented 5G UHD streaming. The architectural design and the video stream optimization mechanism are described, and the system is prototyped based on a realistic virtualized 5G test bed. Empirical experiments validate the design of the framework and yield a set of insightful performance evaluation results.

Jiasong Mu [10] et.al. declares that The ZigBee network is widely studied and deployed recently because of its low cost and simplicity features. However, the power consumption issue needs a further improvement since the application requirements are not fully satisfied. The emerging 5G communication technology is characterized by the smarter devices and the native support for the M2M communication. On that basis, the 5G terminals are capable of joining the existing ZigBee networks and have the potential to improve the data transmission. In this paper, we investigate the performance of the ZigBee networks in the 5G environment for different scenarios. Then a Nearest Access Routing (NAR) algorithm based on the physical depth is proposed for different communication types. To reduce the loads in ZigBee networks, the data flow in the neighborhood of 5G terminals is gathered and transmitted via the IP networks. The simulation results showed that NAR effectively share the communication in ZigBee networks. It leads to better performances with higher packet delivery ratio, less hop counts from ZigBee devices, lower latency, fewer packets sent by ZigBee nodes and zero routing overheads.

CONCLUSION

While the future is becoming more difficult to predict with each passing year, we should expect an accelerating pace of technological change. We conclude that nanotechnology, Cloud computing, All IP are the next great technology. The development of the mobile and wireless networks is going towards higher data rates and all-IP principle.

REFERENCES

(1)Farris Federated IoT services leveraging *5G* technologies at the edge- January 2018.
(2) Bego Blanco, Technology_architecture of future pillars in the_5G_mobile networks:_NFV, MEC and SDN –November 2017.
(3) Rupendra Nath Mitra, 5G_mobile technology: A survey-December 2015.
(4) Erik Dahlman New *5G* Radio-Access Technology-2016.
(5) Zoraida Frias *5G*_networks: Will technology and policy collide?-July 2017.
(6) Shahid Mumtaz, A survey of *5G* technologies: Regulatory, standardization and industrial perspectives-September 2017.
(7) Ian F. Akyildiz, *5G* roadmap: 10 key enabling technologies- September 2016.
(8) Carolina Fortuna Software interfaces for control, optimization and update of_5G_machine type communication networks- December 2017.
(9) Pablo Salva-Garcia 5G-UHD: Design, prototyping and empirical evaluation of adaptive Ultra-High-Definition video streaming based on scalable H.265 in virtualized_5G_networks-December 2017.
(10) Jiasong Muan improved AODV routing for the zigbee heterogeneous networks in 5G environment- April 2017.