Chapter 14
A Key to 5G Networks of Tomorrow

Aqeel ur Rehman  
Hamdard University, Pakistan

Ahmar Murtaza  
Hamdard University, Pakistan

Syed Muhammad Kashif Alam  
Hamdard University, Pakistan

Iqbal Uddin Khan  
Hamdard University, Pakistan

ABSTRACT

The emergence of mobile telephony increases the options of its deployment and utilization. As the research goes further, it also delivered Generations of Mobile Communication to us after rapid intervals of time. Each advancement is considered as the generation. Till now Forth Generation (4G) is in its maturity phase and researchers are planning to see 5G commercially around 2020. In upcoming Fifth Generation (5G), the vision is to reduce latency typically it will be of less than 1ms, as the latency decreases one more thing will be achieved which can be named as Virtually Zero Distance. As the world is becoming the connected world, the availability of data on global networks is going to be huge in size. In addition to that the new emerging concepts like Internet of Things (IoT) are giving boost to the requirement of big data storage and analysis. Internet of Things (IoT) is a concept of providing uniquely identifiable objects connectivity to Internet. This chapter is proposed to highlight the IoT concept and its requirements that are directly linked with the 5G Network technology services.

INTRODUCTION

What is IoT?

Nowadays, “Internet of Thing” (IoT) is one of the most famous topics in researcher’s, business developers and IT industries because they are expecting more than 20 billion devices will be on internet by 2020 and their aim is to enable the interconnection between peoples as well as their environment things based on standardized communication protocols under the name of “Internet of Thing” (IoT). In other word, the monitoring of critical situations, remote management and the wish of keep in touch pushes multiple fields to adopt the terminology called IoT. The Internet of Things (IoT) is the emerging area for the interest of
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researchers which provides a unique communication and remote control capabilities of monitoring and controlling to any physical or virtual objects having any shape and any size, anywhere, anytime and by any one via secured infrastructure of internet with evolving of existing and future technologies. The key of the IoT is that each and every thing which is laid under the term Electronics and can controlled may be connected to the cloud of network and can or may continuously transmit its status or data or receive the date to store or any instruction to be followed. As the above said lines reflects not only the vast area to be considered for development and advancement.

As the technology advances, many different platforms started to evolve with communication features. As we can observed on graph, that in past decade internet started to grow like an impulse. Integration of device sizes, appreciation of Wireless technologies, and growth in demand of palm top or hand held devices led us towards a though that we can have control of each and every electronic device if it can be connected to internet. Evolution of the Internet has occurred five tiers. As the internet is the network of networks, it begins from the connection of two computers and then with help of research and development advanced towards World Wide Web, i.e. huge numbers of computers are connected all together. Mobile-Internet is also a thick branch of internet providing platform to mobile devices to become the part of Internet. Then, via internet social networks emerged. And now, it is rapidly moving towards IoT, means connecting each and everyday objects to the Internet (Perera, Zaslavsky, Christen, & Georgakopoulos, 2014).

Available Wireless Technologies

As every field has its own requirements which may be of high data rate, every field has its own accessing techniques over RF, which may be WiFi, WiMax or any other guided and unguided standard. Similarly, there are numerous technologies and protocol standards will be unified in macro IoT and maximum adoption will be done via unified infrastructure of internet mobility, sensing network and medical field and many more, as all of them could has to transmit bulk amount of data in real time.

Furthermore, the emergence of mobile telephony increases the options of its deployment and utilizations, which pushes researches to increase the options and facilitates over the platform of communication and under the word mobility. As the research goes further, it also delivered Generations of Mobile Communications to us after rapid shit of time intervals. Starting from few character texting services towards the sharing and downloading of bulk data in Gigabytes has come to us. Each advancement is considers as the generation. Till now Forth Generation (4G) is in its maturity phase and researchers are planning to see 5G commercially around 2020.

Evolution of 5G

The sharing of information exhibits more constrains as the distance between communicating entities changes from far too far-off. These constrains includes the increase of latency per hop using single technology as well as the use of multiple technologies per transfer over RF platform.

5G technology, known as the 5th generation mobile technology, is the upcoming mobile communication technology standard. 5G is expected to be rollout in 2020. In upcoming Fifth generation (5G), vision is to reduce latency typically it will be of less than 1mSec, as the latency decrease one more thing will be achieved which can be named as Virtually Zero Distance. Along with the before points, high data rate
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