

## 5G: A Brief Intro with Pros and Cons

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**Abstract**— Another new chapter in the field of mobile communication i.e 5G which comes after 4G and is expected to expand the wireless technology as never before. The purpose of this paper is to introduce 5G with its pros and cons in simple language which will give an overview of this new technology to the technical or non-technical readers.

**Key words:** 5G, Pros and Cons

### I. INTRODUCTION

Evolution has always assisted mankind to grow since beginning of life on this planet, 5G is going to be one of the evolution of this evolutionary world. In the book of wireless communication, 5G is the 5th chapter followed by 1G,2G,3G and 4G where G stands for Generation. We have seen many changes in the technology of this wireless communication which has drastically enhanced the life which we live today and it is growing exponentially, now it's getting harder for us to imagine the coming future.

This paper is divided into four sections:-

- A. What is 5G?
- B. What are the pros of 5G?
- C. What are the cons of 5G?
- D. Conclusion

#### A. What is 5G?

5G is a fifth generation wireless mobile communication technology which will be available to the users by 2020, there are countries like USA,China,Japan, South Korea along with few European countries who have started the trial of this technology. According to ITU (International Telecommunication Union) 5G is an opportunity for policy makers to empower citizens and business which will play a very important role in transforming cities into smart cities by supporting governments & policy makers and also allows citizens and communities to realize and participate in socio-economic benefits delivered by an advanced ,data-intensive, digital economy[1].

This 5G system will use the extremely high frequency band(EHF) of 30-300GHz which is also called millimeter-wave[2] as we know that higher frequencies have shorter wavelength therefore it is mm-wave which has wavelength in between 10 to 1mm.

From the study of [3] research paper 5G network uses the flat IP concept which provides a new way to identify devices using the symbolic names and also 5G uses Nanotechnology as a defensive tool for security concern that arise due to the flat IP.

#### B. What are the Pros of 5G?

Since beginning of this wireless communication, as we have overcome the limitations of 1G,2G, and 3G in the same way 5G is going to remove the demerits of 4G with some additional features.These are as follows:

- 1) mmWave communication provide high antenna gain as they employ large antenna arrays with much smaller

form factor and can achieve multigigabit data rates due to the vast bandwidth[2].

- 2) mmWave communication offers a potential 100GHz new spectrum for mobile communication, which is about 200 times of what current cellular frequencies offer[4].
- 3) Low Latency (processing of high amount of data with minimal delay) will help a lot in remote surgery, industry automation and have a control of real time.
- 4) 5G will have greater capacity which means multitasking, this network is capable of running many high demand applications at one time, from IOT devices,connected cars,HD video streaming and many more.

#### C. What are the cons of 5G?

Nothing can be perfect there will be some roadblocks to each and every new arisings in whatever field but the thing which matters is the amount or the level of discomfort, here in this section we will see few of them:

- 1) Biggest issue on 5G is health issue, as 5G use EHF so there is a debate on this topic and more research work is going on in different parts of the world to make it clear that either 5G is harmful for human and environment or not.
- 2) Increase in number of antenna will increase the cost of installation, since EHF do not cover large distance therefor large amount of antenna will be present in small area to avoid signal attenuation.
- 3) New 5G enabled phone is required, hence we have to replace our phones and that will again increase the cost.
- 4) Security and Privacy is also a big concern.

### II. CONCLUSION

All these technology enhancement are for the people so it is mandatory for them to understand the basic concept along with pros and cons so that, they will have clear visibility of what they are going to use and invest time & money in, this was the main objective of this paper.

### REFERENCES

- [1] [https://read.itu-ilibrary.org/science-and-technology/setting-the-scene-for-5g\\_pub/811d7a5f-00eedfa2-en#page2](https://read.itu-ilibrary.org/science-and-technology/setting-the-scene-for-5g_pub/811d7a5f-00eedfa2-en#page2)
- [2] A.L. Swindlehurst, E. Auanglu, P. Heydari, and F. Capolino, "Millimeter-wave massive MIMO:The next wireless revolution?" IEEE Commun. Mag.,vol.52,no.9,pp. 56-62,Sep.2014.
- [3] Ahmed Farahat Mohamed,Dr. Amin Babiker A/Nabi Mustafa, "Nanotechnology for 5G" (IJSR) volume 5 Issue 2,February 2016.
- [4] Z. Pi and F. Khan,"An introduction to millimeter-wave mobile broadband systems," IEEE J. Sel. Areas Communication Mag. vol. 49, no. 6, pp.101-107,June 2011