© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 07 Issue: 06 | July – September 2016
Paper is available at www.jrps.in | Email : info@jrps.in

REVIEW PAPR ON WI-FI 4G

[1]Arti, Research Scholar, Department of Electronic and communication, IIET Kinana (Jind)
[2]Amit Mahal (Asst. Professor). Department of Electronic and communication, IIET Kinana (Jind)

ABSTRACT: Wi-Fi is a term that most of us hear almost every day and is a service most would consider an integral part of our lives. From our smart phones to our game consoles and computers, most devices on the market today are equipped to use Wi-Fi. While WiFi has become critical to routines of many, a large portion of us don't know anything more than the basics. Wireless Fidelity is the wireless way to handle networking. It is also known as 802.11 networking and wireless networking. Using this technology we can connect computers anywhere in a home or office without the need of any wires. The computers connect to the network using radio signals, and they can be up to 100 feet or so apart. Wi-Fi allows to connect to the internet from virtually anywhere at speeds of up to 54Mbps.The computers and handsets enabled with this technology use radio technologies based on the IEEE 802.11 standard to send and receive data anywhere within the range of a base station.

[1] Introduction

Wi-Fi would certainly not exist without a decision taken in 1985 by the Federal Communications Commission (FCC), America's telecoms regulator, to open several bands of wireless spectrum, allowing them to be used without the need for a government licence. This was an unheard-of move at the time; other than the ham-radio channels, there was very little unlicensed spectrum. But the FCC, prompted by a visionary engineer on its staff, Michael Marcus, took three chunks of spectrum from the industrial, scientific and medical bands and opened them up to communications entrepreneurs.

These so-called "garbage bands", at 900MHz, 2.4GHz and 5.8GHz, were already allocated to equipment that used radio-frequency energy for purposes other than communications: microwave ovens, for example, which use radio waves to heat food. The FCC made them available for communications purposes as well, on the condition that any devices using these bands would have to steer around interference from other equipment. They would do so using "spread spectrum" technology, originally developed for military use, which spreads a radio signal out over a wide range of frequencies, in contrast to the usual approach of transmitting on a single, well-defined frequency. This makes the signal both difficult to intercept and less susceptible to interference.

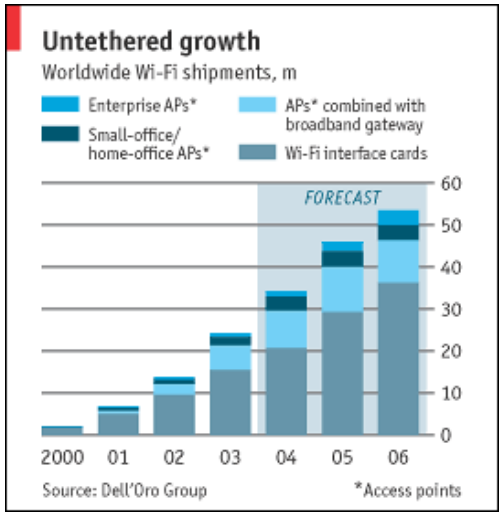

Fig 1 untethered growth

© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 07 Issue: 06 | July – September 2016
Paper is available at www.jrps.in | Email : info@jrps.in

How was Wi-Fi invented?

Wi-Fi was born in 1985 after the United States FCC opened up the wireless frequencies 900Mhz, 2.4Ghz, and 5.8Ghz to be used without a license. These radio bands were used by household appliances such as microwaves, and were assumed to have no practical application in communications due to interference from the aforementioned appliances. To make these frequencies useable for communication, the FCC mandated usage of spread spectrum technology over these bands.

Configuring WiFi:

On the newest machines, an 802.11 card will automatically connect with an 802.11 hotspot and a network connection will be established. As soon as we turn on our machine, it will connect and we will be able to browse the web, send email, etc using Wi-Fi. On older machines we often have to go through this simple 3-step process to connect to a hotspot:

- Access the software for the 802.11 card- normally there is an icon for the card down in the system tray at the bottom right of the screen.
- Click the "Search button" in the software. The card will search for all of the available hotspots in the area and shows a list.
- Double-click on one of the hotspots to connect to it.
- On ancient 802.11 equipment, there is no automatic search feature. We have to find what is known as the **SSID** (server set id) of the hotspot (usually a short word of 10 characters or less) as well as the channel number (an integer between 1 and 11) and type these two pieces of information in manually. All the search feature is doing is grabbing these two pieces of information from the radio signals generated by the hotspot and displaying them for us.

[2] Literature Review

In July 2015 research was published under title "**WIRELESS TECHNOLOGY IN NETWORKS**" authored by Surabhi Surendra Tambe, in which she presents overview regarding emerging technology of Wireless Brodband networks. It focuses on history, tools, standards and implementation of Wi-Fi networks.However main purpose of that research paper had been to understand various problems associated with implementation of these WLANs and propose recommendation and measures to solve these problems and mitigate potential risk factors.

According to her telecommunication has become integral part of their daily lives and has been contributing widely to advancement in various fields. One of emerging mode had been Wireless broadband technology which transmits multiplexed information on wide band of frequencies. deployment of Wireless broadband services had been done by weighing geographical population density against bandwidth limitation. Wireless technologies are designed to reduce time and different types of obstacles created by cables and more convenient than wired networking. In 1997,'Wireless fidelity-popularly known as Wi-Fi technology was developed by IEEE 802.11 standards which provided users liberty to connect to internet from any place.But that service was pretty expensive till 2002 ,however new 802.11g standards in 2003 has lead to creation of Wifi enabled devices to masses as result today Wi-Fi router has become household commodity in most modern homes in India

Sep 2014 research was published by Sumant Ku Mohapatra, Ramya Ranjan Choudhury, and Pravanjan Das on topic of "**THE FUTURE DIRECTIONS IN EVOLVING WI-FI: TECHNOLOGIES,**

© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 07 Issue: 06 | July – September 2016
Paper is available at www.jrps.in | Email : info@jrps.in

APPLICATIONS AND SERVICES, India" in which they talk about new research directions, that will lead to fundamental changes in design of future WiFi networks. However, with explosion of wireless mobile applications and services, there are still some challenges on spectrum crisis and high energy consumption. Wireless system designers have been facing continuously increasing demand for high data rates and spectrum sharing required by new wireless applications and therefore have started research on future WiFi wireless technologies that are expected to be deployed beyond 2020.

"**Model for energy efficiency in radio over fiber distributed indoor antenna Wi-Fi network**" was published by Yves Josse, Bruno Fracasso & Patrice Pajusco in which they explain model for energy efficiency in radio over fiber distributed indoor antenna Wi-Fi network Distributed antenna systems (DAS) are known to improve coverage and performance of wireless communications in indoor environments. In that paper, power consumption and energy efficiency of DAS using radio over fiber (RoF) are evaluated and compared with those in centralized antenna system. instantaneous power consumption curves of Wi-Fi access point and dongle combination are physically measured for different transmission configurations, yielding distance dependent energy efficiency model.

[3] TOOLS AND TECHNOLOGY

WiFi has brought new aspect in ground of networking. broadcast of data is completed via radio waves & cost of cables for network lying down.Wi-Fi enable user to get access to internet anywhere in given location. Now you could make network in Hotels, Libraries, colleges, universities, campus, private institutes, & coffee shops & even on public place to make your business more profitable & connect with their client any time. WiFi makes waves for business with their highly effective cable less media.

Advantages of WiFi on commercial level

Unmatched mobility & elasticity

Wi-Fi, is allowing new intensity of connectivity without giving up functions. Wi-Fi introduced various types of utilities such music streamers that transmit your music to speakers without any wire you could also play music from remote computer or any other attached to network. most important now you could play online radio. Wifi technology system is rather remarkable, you could download songs, send email & transfer files expediently at sky-scraping speed & you could move your computer easily because your WiFi network has no cable to disrupt your work so we could say that it is quite easy, helpful & most of all expedient.

Fortress Technology

WiFi providing secure wireless solutions support growth & release of prototype mobile ad hoc wireless network for use in wireless strategic skirmish.

Support-entire age bracket.

WiFi technology has several advantages it support-entire age bracket & create connection between components on same network & have ability to transfer data between devices & enable different kind of devices such as game, MP3 player, PDA's & much more!

It's convenient & every where

WiFi is convenient technology & where range station exists you are online during travel you could equip with Wi-Fi network & set up shop anyplace. You will automatically connect with internet if you are near hotspot. These days WiFi exist every where with all its wonders.

Know your Standards

When looking for wireless router, you first want to check whether it's "b," "g," or "n." letters refer to wireless communication standard on which router is based: 802.11b, 802.11g, & 802.11n. first generation of wireless routers was

© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 07 Issue: 06 | July – September 2016
Paper is available at www.jrps.in | Email : info@jrps.in

"b," followed by "g," & now "n"—the newest generation. primary difference among router standards is speed (more on that in bit) & range.

You won't find many "b" routers available anymore (except on eBay, perhaps) because it's old technology. If you're currently using "b" routers on your network, you should consider upgrading.

Wireless Modems

Wireless modems transmit data signals through air instead of by using cable. They sometimes are called radio frequency modem. This type of modem is designed to work with cellular technology, & wireless local area networks. Wireless modems use two types of transmission to transfer their data; radio transceivers & infrared (IR). Radio transceiver modems have three ways of transmitting data; transceiver-transceiver, transciever-sattellite-transceiver, & cellular phone. Radio transceiver-transceiver could be used as point-point or point-multipoint operation & generally transmit at frequency of 900 MHz. Radio transceiver modems have advantages & disadvantages when compared with wired modem.

[4] PROPOSED WORK

First up, let's deal with that weird looking 802 number. This naming system would be actually used by number of networking standards that you would probably be familiar. Ethernet networks begin with 802.3, Bluetooth had 802.15 prefix, & Wi Fi would be tagged with 802.11. All different Wi Fi varieties would begin with this 802.11 number, followed by letter or two which, from consumer point of view, would be useful for identifying other properties, such as maximum speed & range of particular device.

To help ensure compatibility with different pieces of hardware & networks, you'll often find that products support multiple, if not all of standards at same time. You might have seen listing such as Wi-Fi 802.11 a/b/g/n/ac on spec sheet for many smart phones, which covers all of oldest & most common modern standards.

Diff. b/w Standard & Amendment

Both terms "standard" & "amendment" are used when referring to different variants of IEEE standards.

As far as IEEE Standards Association would be concerned, there would be only one current standard; it would be denoted by IEEE 802.11 followed by date that it had been published. IEEE 802.11-2012 would be only version currently in publication. standard would be updated by means of amendments. Amendments are created by task groups (TG). Both task group & their finished document are denoted by 802.11 followed by non-capitalized letter, for example, IEEE 802.11a & IEEE 802.11b. Updating 802.11 would be responsibility of task group m. In order to create new version, TGm combines previous version of standard & all published amendments. TGm also provides clarification & interpretation to industry on published documents. New versions of **IEEE 802.11** were published in 1999, 2007, & 2012. next would be expected in 2016.

[5] Conclusion

WiFi has brought new aspect in ground of networking. broadcast of data is completed via radio waves & cost of cables for network lying down.Wi-Fi enable user to get access to internet anywhere in given location. Now you could make network in Hotels, Libraries, colleges, universities, campus, private institutes, & coffee shops & even on public place to make your business more profitable & connect with their client any time. WiFi makes waves for business with their highly effective cable less media.

© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 07 Issue: 06 | July – September 2016
Paper is available at www.jrps.in | Email : info@jrps.in

WiFi technology has several advantages it support-entire age bracket & create connection between components on same network & have ability to transfer data between devices & enable different kind of devices such as game, MP3 player, PDA's

With WiFi you could get high speed of internet because it is very fast than DSL & Cable connection you could establish Wifi network in small space now you don't need any professional installation just connect to power outlet with-Ethernet cord, & start browsing. WiFi security system for Threats makes it more renewable & its tool protect your VPN & secure web page. Advantages of wired modem are that no costly wiring to maintain, no costly wiring to install, no down time waiting on connection, could connect through hub to communicate with wired modem, & no fees to pay for leased line. Disadvantages of wired modem are higher initial cost of equipment ($500-$899), with satellite & cellular modems higher operating cost, security harder to maintain, short transmission range; generally 20 miles unless you use repeaters, data transmission speed goes down as range increases, & loss of data.

REFERENCE

1. 3GPP:Standards organization associated with ITU.
2. Gast,Matthew,802.11 Wireless Networks:The Definitive Guide,2nd Edition,O'Reilly Media,Inc.,2005
3. Ni,Qiang,Romdhani,Lamia,and Turletti,Thierry,"A Survey of QoS Enhancements for IEEE 802.11 Wireless LAN",Journal of Wireless Communication and Mobile computing,Vol.4,No.5,2004,pp547-566
4. Mani Subramanium,Network Management-Principles and Practices,2nd Edition,Pearson,2013.
5. http://ciscovni.com/gist/index.html
6. http://www.merunetworks.com
7. Jeffery Andrews, "Seven ways that HetNets are a cellular paradigm Shift", IEEE Communication Magazine, Vol. 51 No.3 March. 2013.
8. http://www.zdnet.com/super-fast-wi-fi-coming-802-11ac-2013-7000025352/
9. Qualcomm, "A Comparison of LTE Advanced HetNetsand WiFi," white paper, WiFi.pdf,Sept. 2011.http://www.qualcomm.com/media/
10. http://www.wi-fi.org/news-events/newsroom/
11. Verma, L. ;Fakharzadeh, M. ; Sunghyun Choi, "Wifi on steroids: 802.11AC and 802.11AD ",Wireless Communications, IEEE Vol.20,Issue: 6, December 2013.
12. HyoilKim ; Sch. of Electr. &Comput. Eng., Ulsan Nat. Inst. of Sci. & Technol. (UNIST), Ulsan, South Korea ;Jaehyuk Choi ; Shin, K.G., "Hierarchical Market Competition in a Duopoly Super WiFi Spectrum Market ",Selected Areas in Communications, IEEE Journal,Vol-31-No.11, November 2013
13. Bouet, M. ;Nguengang, G. ; Conan, V. ; Kousaridas, A. ; Spapis, P. ; Alonistioti, N."Embedding cognition in wireless network management: an experimental perspective",Communications Magazine, IEEE,Vol. 50 ,Issue: 12,2012 , Page(s): 150 – 160
14. Bennis, M. ;Simsek, M. ; Czylwik, A. ; Saad, W. ; Valentin, S. ; Debbah, M.,"When cellular meets WiFi in wireless small cell networks", Communications Magazine, IEEE, Volume: 51 , Issue: 6,2013,Page(s): 44 – 50.
15. M. Sauer, A. Kobyakov, and J. George, "Radio over fiber for picocellular network architectures," Lightwave Technology, Journal of, vol. 25, no. 11, pp. 3301–3320, Nov. 2007.

© INTERNATIONAL JOURNAL FOR RESEARCH PUBLICATION & SEMINAR
ISSN: 2278-6848 | Volume: 07 Issue: 06 | July – September 2016
Paper is available at www.jrps.in | Email : info@jrps.in

16. T. Rappaport, Wireless Communications Principles an Practice. Upper Saddle River, NJ: Prentice Hall, 1999.
17. COST 231, "Digital mobile radio towards future generation systems," European Commission, Brussels, Belgium, Tech. Rep., 1999.
18. "WG302 data sheet." [Online]. Available: http://kbserver.netgear.com/ datasheets/WG302 ds 28April05.pdf
19. "Iperf software." [Online]. Available: http://iperf.sourceforge.net/%http: //dast.nlanr.net
20. J. Ebert, B. Burns, and A. Wolisz, "A trace-based approach for determining the energy consumption of a wlan network interface," in In Proc. of European wireless, Florence, Italy 2002.
21. D. Wake, A. Nkansah, N. Gomes, C. Lethien, C. Sion, and J.-P. Vilcot, "Optically powered remote units for radio-over-fiber systems," Lightwave Technology, Journal of, vol. 26, no. 15, pp. 2484–2491, Aug.1, 2008.
22. J. Guillory, S. Meyer, I. Siaud, A. Ulmer-moll, B. Charbonnier, A. Pizzinat, and C. Algani, "Radio-over-fiber architectures," Vehicular Technology Magazine, IEEE, vol. 5, no. 3, pp. 30 –38, 2010.
23. I. Haratcherev, C. Balageas, and M. Fiorito, "Low consumption home femto base stations," in Personal, Indoor and Mobile Radio Communications, 2009 IEEE 20th International Symposium on, 2009, pp. 1 –5.
24. Cisco Network Register user's Guide. May 2011.
25. Y.Hie, F.Yu, K. Achan, E. Gillum, M.Goldszmidt and T.Wobber. "How Dynamic are IP Addresses". In Proc. Of ACM SIGCOMM, 2007.
26. Filippo Geraci and Roberto Grossi February 2011,"Distilling Router Data Analysis for faster and simpler Dynamic IP lookup Algorithms".
27. Yu Jin, Esam Sharafuddin, Zhi-Li Zhang "Identifying Dynamic IP Address Blocks Serendipitously through Background Scanning Traffic". University of Minnesota. April 2011.