

WHATSAPP

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Abstract— Online Social Networks (OSNs) have rapidly become an integral part of our daily lives, and hundreds of millions of people are nowadays remotely connected through popular OSNs such as WhatsApp. While much has been said and studied about the social aspects of OSNs, little is known about the network side of OSNs, specially regarding their network and traffic footprints, as well as their content delivery infrastructures. In this paper we study these networking aspects of OSNs, vivisectioning the most popular OSNs in western countries WhatsApp. By analyzing two large-scale traffic traces collected at the cellular network of a major European ISP, we characterize and compare the networking behavior of Facebook and WhatsApp, considering not only the traffic flows but also the network infrastructures hosting them. Our study serves the main purpose of better understanding how major OSNs are provisioned in today's Internet. To the best of our knowledge, this is the first paper providing such an analysis using large-scale measurements in cellular networks.

Keywords— Instant Messaging (IM) Applications, Smartphones, WhatsApp, Online Communication, Uses & Gratifications

I. INTRODUCTION

New technology plays a vital role in the process of communication in today's world. With the sudden evolutionary boom of Internet, many Instant Messaging (IM) services supported by various Digital technologies are bringing explosion of interactivity among users. The internet active users do not limit themselves to the consumption of content but they are allowing themselves to connect with one another in a unique way. Apart from social networking services (SNS) like Facebook, Orkut, MySpa, leading to maintenance of relationships, the commencement of Mobile Instant Messaging applications² are strengthening the intensity of social relationships.



According to Global Messaging Findings WhatsApp is the most used smartphone messaging service in UK with There has been rapid increase in online communication from last few years, especially in mobile communication as of all Internet users did so through a mobile device. In recent years, the mobile phones technology has evolved many drastic changes shifted from an interpersonal communication device to multimedia sets. Earlier, People used cell phones only for making phone calls, for storing information such as contacts and calendars and PC's performed tasks such as accessing the internet, reading emails, editing documents and playing games. Smartphones provides regular features of a mobile phone along with computing power supported by richness and capabilities of mobile applications. The use of mobile phones has triggered a new dimension of virtual mobility that made possible faster and more personalized social interaction.

II. INSTANT MESSAGING

Instant messaging (IM) is a type of very popular and commonly seen communication services via the internet to enable people to create a private or group chat space. According to Global Mobile Consumer Survey 2013 instant messaging catches up with SMS with 69% and 67. An Instant Messaging applications can serve as a very useful and

interactive way of communication which allow users to exchange

instant messages in form of text, share videos, audios and images via smartphones instead of relying on desktops and laptops. Nowadays young generation is keeping themselves busy in chatting and messaging every time with friends. To meet such demand Telecommunication industries offering a variety of turned up operating systems with unique characteristics such as Android OS (41%), Windows OS(18%), iPhone (Apple) (22%), Blackberry (RIM 8%), Symbian (Nokia 9%)4etc. Every operating system serves the smartphone along with their application stores (Appstore: Google's Play store for Android) 7from where these Applications can be installed easily.

A. *Smartphones-* Undoubtedly, smartphones are becoming central to our communication and information needs. The term smartphone refers to a programmable mobile phone that offers advanced capabilities and features that help individuals in their daily work and personal life. It contains functions such as instant messaging, downloading applications, utilizing information services as WiFi and global positioning system (GPS) and entertainment5. A smartphone ability to complement our lives is directly related to the richness and quality of its Mobile applications. In modern era smartphones have acquired the market so well that everybody now can interact, socialize, and can share ideas and information sitting at any corner in the world through an instant messaging applications like WhatsApp, Bbm, WeChat, Viber, Line, ChatOn, Hangouts, Skype, Windows Instant Messenger, GTalk, etc.

B. *WhatsApp (100000000+downloads on Google Play):-* One of the most interesting MIM applications on the market today is WhatsApp. The phenomenal growth of internet-based mobile messaging service WhatsApp, which Facebook has acquired for \$19 billion, not only undermined the messaging initiatives of Facebook and Google, but they also had a huge adverse effect on traditional mobile messaging service SMS8. According to NIELSEN

INDIA CONSUMER RANKINGS WhatsApp Messenger is the leading application of smartphone9. WhatsApp is a cross- platform instant messaging application for smartphones. It enables users to send and receive location information, images, videos, audio and text messages in real-time to individual and group of friends at no cost. At present WhatsApp handles over 10 billion messages per-day and is one of the most popular paid for apps across all mobile platforms. WhatsApp Messenger is available for iphone, Blackberry, Android, Windows Phone and these phones can all message each other. It uses the same internet data that you use for email and web browsing, there is no cost for messages. In addition to basic messaging it enables users to send and receive location information, images, video, audio and text messages in real-time to individuals and groups of friends at no cost10.

C. *No hidden cost:* First year Free! (\$0.99USD/year after)

D. *Multimedia messages:* Send video, Images and voice notes to Friends and contacts.

E. *Group chat :* Group conversation with WhatsApp users in contacts

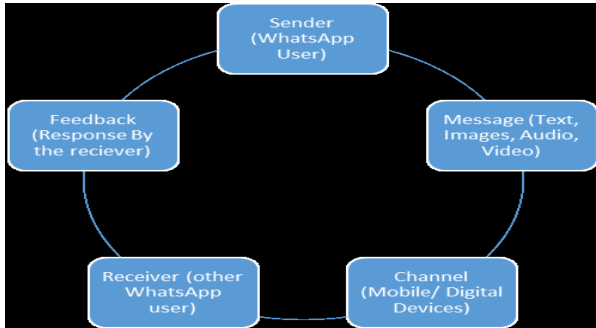
F. *No International Charges:* there is no cost to send WhatsApp messages internationally.

G. *No pins and username:* WhatsApp work with phone numbers.

H. *No Log out/ In:* No confusion about getting logged off from another computer or device with push notification WhatsApp is always on and connected .

I. WhatsApp through his mobile device is free to send messages in Textual, Images, Audio and Video format through the Mobile/Digital device channel (WhatsApp) enables by data plan required for any type web surfing or browsing which connects the device to a network leading to the connectivity and at receiver end she/he can receive the message and can interpret the same and can make response which comprises feedback. In the whole process the sender and receiver acts as a

participant who and whereas Noise is concerned can take place at any end. From the above discussion it is concluded Whatsapp as an Online Communication Application.



WhatsApp communication process

WhatsApp communication process with sender, message, channel, receiver and feedback as elements of communication where noise element can occur at any place.

III. PROTOCOL USED

WhatsApp uses a customized version of the open standard Extensible Messaging and Presence Protocol (XMPP) Upon installation, it creates a user account using one's phone number as the username (Jabber ID: [phone number] @s.whatsapp.net). WhatsApp software automatically compares all the phone numbers from the device's address book with its central database of users to automatically add contacts to the user's WhatsApp contact list. Previously the

Android and S40 versions used an MD5-hashed, eversed-version of the phone's IMEI as password, while the iOS version used the phone's Wi-Fi MAC address instead of IMEI. A 2012 update now generates a random password on the server side.

EXTENSIBLE MESSAGING AND PRESENCE PROTOCOL (XMPP)-

protocol for message-oriented middleware based on XML(Extensible Markup Language).[1] The protocol was originally named Jabber,[2] and was developed by the Jabber open-source community in 1999 for near real-time, instant messaging (IM), presence information, and contact list maintenance.

Designed to be extensible, the protocol has also been used for publish/subscribe systems, signaling for VoIP, video, file transfer, gaming, Internet of Things applications such as the smart grid, and social networking services. Unlike most instant messaging protocols, XMPP is defined in an open standard and uses an open systems approach of development and application, by which anyone may implement an XMPP service and interoperate with other organizations' implementations. Because XMPP is an open protocol, implementations can be developed using any software license; although many server, client, and library implementations are distributed as free and open-source software, numerous freeware and commercial software implementations also exist.

IV. CHARACTERISTICS

- A. Open: It's free. There are multiple implementations for open source XMPP servers, as many customers and development libraries.
- B. Free: you can see how it works, and the user has the freedom to implement himself the Freedom to suit their needs, without needing anyone's approval.
- C. Extensible: using the potential of XML, anyone can extend the XMPP protocol for Custom functionality.
- D. Decentralized: anyone can start their own XMPP server.
- E. Insurance: Safety Supports the transport layer and any XMPP server can be isolated
- F. From the public XMPP.

V. LITERATURE REVIEW

- A. Study 1: Uses and Gratifications of Social Media: A comparison of Facebook and Instant Messaging

The study conducted by Haase and Young (2010) stated that key motivations of joining social media is peer pressure, social connectivity, and utilitarian need that motivates them to use social media. The study also identified the factors of motivations:

Pastime, Affection, Fashion, Share problem, Sociability, Social Information. The above study concluded that above factors were the reasons of using Facebook instead of instant messaging by youth falling in the age group of 18 to 23 years.

B. *Study 2: What's up with WhatsApp? Comparing Mobile Instant Messaging behaviours with Traditional SMS* The another study conducted by Karen Church and Rodrigo de oliveira (2013) reported 8 themes through interview of 9 active users of WhatsApp and further justified through survey of 131 Spain youth through online questionnaires. These themes were: Cost, Social Influence, Nature/Intent, Community & sense of connection, Immediacy, Privacy concerns & Expectations, Reliability & Guarantee, Choice of technology and Coping Mechanism. The study concluded that applications got popularity because of economic reasons as well as because of its nature as it is convenient to use and less complicated.

C. *Study 3: -The impact of Technology (BBM & WhatsApp Applications) on English Linguistics in Kuwait*

D. The study was commenced by Ashraf Atta M. S. Salem (2013) Stated through experimental research that in Kuwait, using smart phones with various applications it provide that includes "BBM" or Blackberry text messages and iPhone text message applications like "WhatsApp" have detrimental effects on English language use. Teenagers especially and young people in general use certain codes of abbreviations or shortcuts to express their ideas to the extent that spoils English grammar as well as spelling.

E. *Study 4: Smartphone Application Usage Amongst Students at a South African University* The study conducted by Walter UYS, Aadilah MIA, Gary Jeffrey JANSEN, et.al.(2102) founded that the students that were questioned, spend an average of five hours per day on their smartphones interacting with others via SNS, and remain online for about 16 hours per day. The students that were

sampled preferred to communicate using SNS. These students appear to use SMS for close friends only, and phone calls for loved ones and family; possibly due to the high cost of SMS and phone calls in South Africa compared to the low cost of SNS. Students use SNS predominantly for Facebook, Facebook chat and Blackberry Messenger (BB users) in order to update their profiles, chat with friends, and look at their friends' profiles and statuses.

VI. OBJECTIVES

The broad objective of the study is to examine Uses & Gratifications of the WhatsApp among youth.

Specific Objectives:

- To study the usage of WhatsApp among Youths.
- To know what motivates them to use WhatsApp.
- To explore whether WhatsApp fulfills their needs of maintaining their social relationships
- To find out whether WhatsApp fulfills their expectations.

Operational Definitions of Terms: The paper consists of following terms which is defined by researchers as follows:

- *Instant Messaging:* Instant Messaging is software application that allows users to send and receive the message in real time.
- *WhatsApp:* instant messaging applications which serves communication online.
- *Youths (Plural):* Youths are defined as young males and females between the ages of 18-30 years.
- *Uses:* uses as a concept means "Selection and Usage of Medium".
- *Gratification:* gratification means "feeling of satisfaction".
- *Online:* the word online means connected to a network.
- *Communication:* it is a process where sending and receiving of message take place.

VII. METHODOLOGY

The study is conducted in two phases covering qualitative and quantitative aspect of the research.

Phase I: This phase deals with broad investigation of the use of WhatsApp in the daily lives of young people. The in-depth interviews of 7 active users of WhatsApp, 4 girls and 3 boys of the university were conducted. The interviews conducted dealt with semi-structured and open-ended questions. The basic need for the interview is to know following things:

- A. The use of their smartphone and daily communication activities they perform on it.
- B. From how long they are using WhatsApp
- C. The motives of using WhatsApp

Phase II: On the basis of interviews conducted, questionnaire was developed covering three sections:

- A. Demographic Information
- B. Use of Smartphone
- C. Usage of WhatsApp

VIII. CONCLUSION

With the advent of drastic booms in the Telecommunication field the explosion of Instant Messaging not only facilitating the communication but also deals with different aspect where every user associate him with it. From the study carried by the researchers, the findings are not only interesting but somewhere shocking as it shows the shift from Social Networking Sites to Instant Messaging Applications (WhatsApp). According to the results, youth whether from Urban, Rural and sub urban area is using WhatsApp with their Smartphone devices. The leading Android OS along with Samsung Brand occupies top position among all other Brands and Operating system. The respondents stated that the perform following activities Messaging, Calls, Instant Messaging and Social Networking Services through their smartphone devices to fulfill their need of communication. More than 80% of the respondents are using WhatsApp on their Daily Basis 90% for maximum 0-1hr duration. Most of them like all the features WhatsApp along with Emoticons which attracts more than 50% to use while chatting. The

findings also stated the reasons of motivation of youths using WhatsApp.

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