INTERNATIONAL JOURNAL OF ADVANCE RESEARCH, IDEAS AND INNOVATIONS IN TECHNOLOGY

ISSN: 2454-132X
Impact factor: 4.295
*(Volume 4, Issue 5)*
Available online at: www.ijariit.com

# Vulnerabilities attacks on mobile operating systems (Android versus iOS): A review

*D. Kavinya*
*kavinyacs@gmail.com*
*K S R Institute for Engineering and Technology, Tiruchengode, Tamil Nadu*

*R. Sathya Priya*
*ramsathya.priya32@gmail.com*
*K S R Institute for Engineering and Technology, Tiruchengode, Tamil Nadu*

*R. Deebika*
*rdeebikame@gmail.com*
*K S R Institute for Engineering and Technology, Tiruchengode, Tamil Nadu*

## ABSTRACT

***As the needs of humans are rising, the technology is also growing tremendously, with the adverse necessity in day to day life for the usage of latest technologies mobile phone ranks top in the list. Such ubiquitous computing has several benefits, which also saves a higher intensity of time. With the increased connectivity facilities provided by the smartphones. Every citizen tends to use those facilities. Therefore these smartphones provide an ideal target for the hackers. The giant operating systems so far popular among smartphone users is ANDROID, which is an open source operating system. The next flagging operating system is iOS. The malware writers tend to code for android comparatively. Thus these fly rocketing technologies must be targeted for their safety rather than for their usage. This paper provides an overview of the major reasons for threats in iOS and Android operating systems.***

***Keywords***— *Android operating system, iOS, Malware*

## 1. INTRODUCTION

The world is diverse and the needs are not limited, these have created the computing. Rather than using standalone computing, ubiquitous computing has become an ideal one which makes people idle too. With the advent of mobile phones, the communication has become a reachable resource for the rural areas. The Android operating systems serve as the top with more features. Since it's an open source O.S every one could purchase it on ease.


**Fig. 1: Graph showing usage of different operating systems in 2018**

In the year 2018, about 68.71% of people are using android O.S, 29.60% are using iOS, 0.30% of people are using windows phone, and 0.06% are using Symbian. The iOS are costlier compared with all smartphones since it is not a free source operating system. But still, due to its best features, there is a wide increase in the iOS usage in the current market.

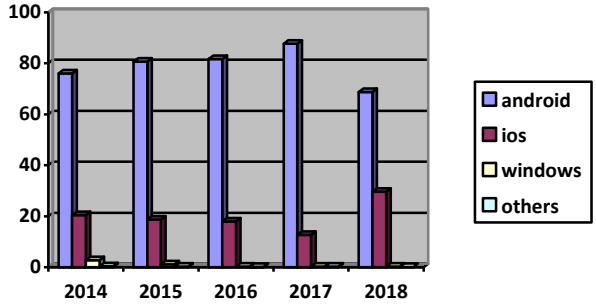


**Fig. 2: Graph showing usage of different operating systems in different years**

From the above graph, it is observed that the Android O.S has its peak in 2017 and has got down in early 2018. Thus the iOS usage is widening. The below sections shows the reason for the increased usage of iOS compared with the android.

## 2. THE ARCHITECTURE OF ANDROID OS

Android is an open source operating system, as it is built upon Linux kernel it has achieved that property. Android is built with the software stack comprising of applications, application framework, libraries, Linux kernel. For providing the better mobile application, each layer in the stack is tightly integrated. The coding for Android is done in java.

Thus Android is an open source O.S with interoperability feature, it provides a better way for the developers to design their applications at ease of cost. This also reduces the overall cost of the Android smartphone device in the internet world.

 

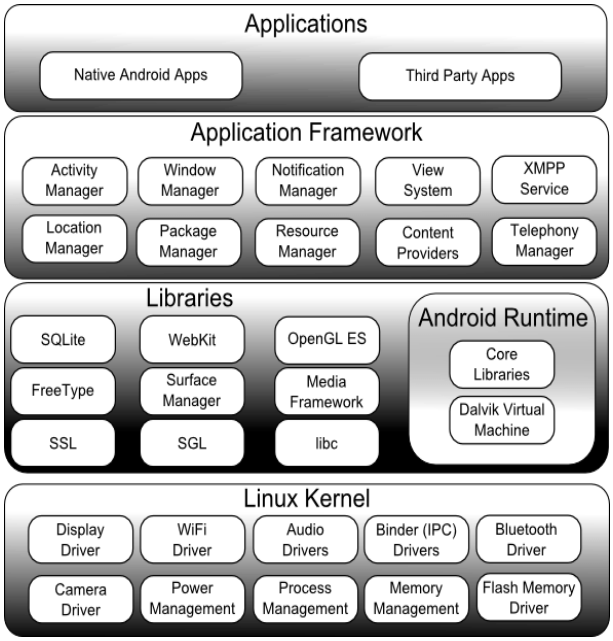


**Fig. 3: Android architecture**

## 3. ARCHITECTURE OF iOS

The Apple operating system uses objective c language, which is a superclass of Microsoft's c. It is not an open source O.S. but then the developers are eager to write coding for iOS is because it's easier to code than the above one. The figure below shows the architecture of iOS.

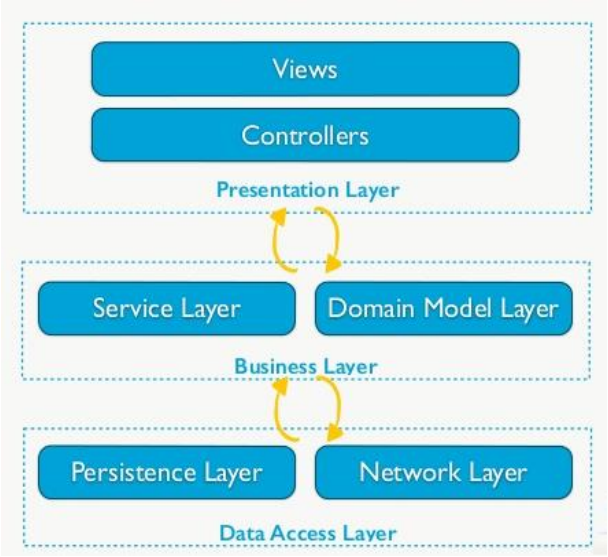


**Fig. 4: iOS architecture**

The application is divided into layers, which represents the logical section of the system. There are 3 layers and the top layer which is the presentation layer is meant for the outlook of the app. The next layer, Business layer performs processing on data with respect to business rules. The data access layer provides access to data by the user, the data are stored in the back end.

## 4. REASON FOR THE VULNERABILITIES IN ANDROID COMPARED WITH iOS

The Android app is written in Java using android studio which is an open source. Developers can write their app and so there is the greatest chance of vulnerabilities in Android smartphones.

When an app is developed by an Android developer it's digitally signed and is uploaded to the play store. The developers need not register with google play.

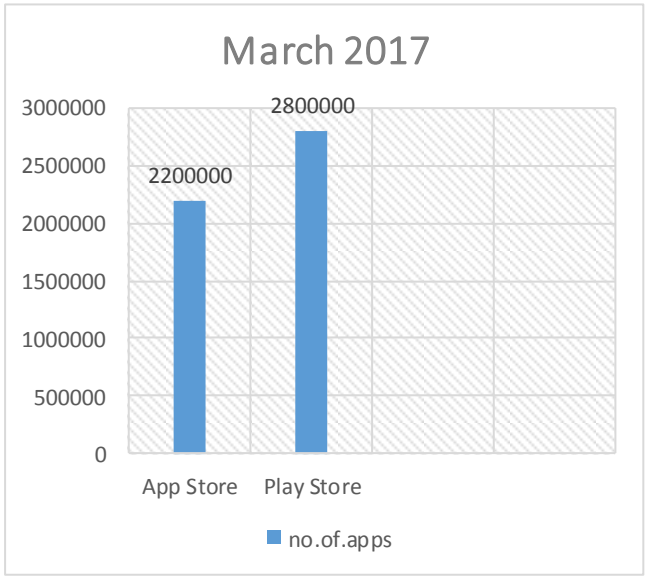


**Fig. 5: Number of apps in App store and Play store**

There are several apps developed in both iOS and Android, the above graph clearly depicts the number of apps in both OS [10]. Developing apps in Android is easier compared with the apple as android is an open source. The hackers mainly attack android compared with apple, as Android is more widely used.

One of the main reason for the vulnerabilities is due to not updating the O.S version, as the securities are increased compared with the older version of the operating system. The below chart shows the android O.S usage statistics, it's clearly identified that there are still users using older versions.

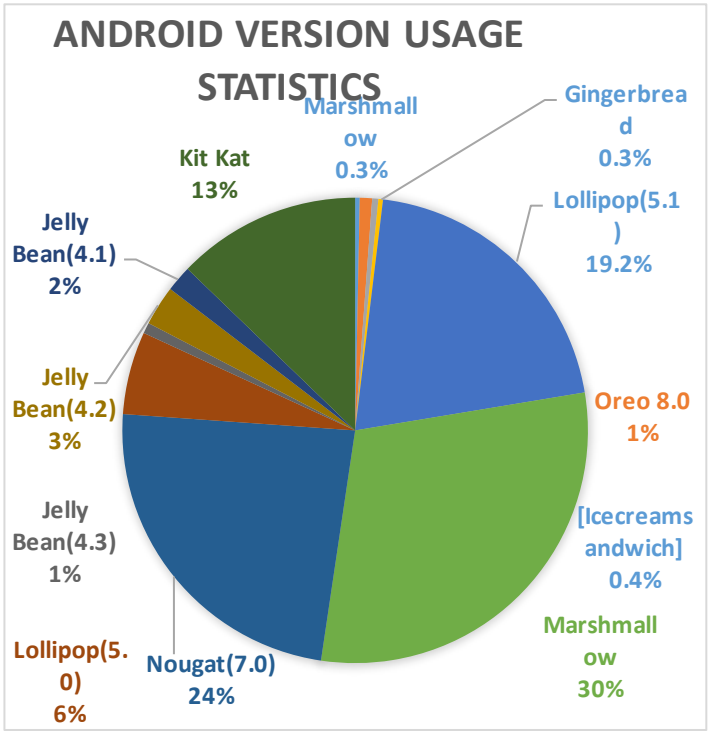


**Fig. 6: Android version usage statistics**

The iOS older versions are being rarely used by the iPhone users and hence it is also a reason for rare vulnerabilities attacks on iOS. The below chart illustrates the usage statistics of iOS. It's observed that the Android latest version [January 2018] is only used by 30% of Android users whereas iOS latest version is being used by 88% of iPhone users.

 

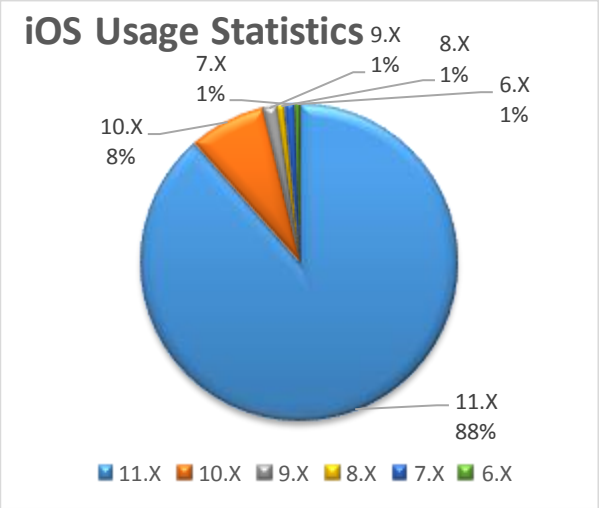


**Fig. 7: iOS usage statistics**

There are no restrictions on android app development and hence there are many third-party apps. There is no surety that these apps never gathers end user data. There are few apps which require unwanted resource permission rights in the user device during the app installation. Thus there is a chance of data breach by those third-party apps.

In iOS, for an application to be updated in the App Store there is a testing process, once if the app gets verified by the expert's team it can be uploaded in the App Store. Hence security is greater than android O.S. Most of the apps in the App Store are paid apps, it makes revenue for the testing.

The data in the iPhone are encrypted and hence it's more secure than Android, the main reason for the vulnerabilities in android is due to the open platform.

## 5. CONCLUSION

The smartphones have a major impact on emerging works. Instead of carrying computer the works are being done on the handheld device. As the technology is skyrocketing due to the needs of users the security and privacy are of prime concern.
In this paper, the review between Android and iOS are done for evaluating the vulnerabilities in them. The apple as it's a closed platform provides data privacy and security compared with the Android which is an open platform.

## 6. REFERENCES

[1] Google bets on Android future. http://news.bbc.co.uk/2/hi/technology/7266201.stm
[2] By Muneer Ahmad Dar & Javed Parvez, "Evaluating Smartphone Application Security: A Case Study on Android", Global Journal of Computer Science and Technology Network, Web & Security, Volume 13 Issue 12 Version 1.0 the Year 2013, pp.9-15
[3] M. Ongtang, K. Butler, and P. McDaniel, "Porscha: Policy-oriented secure content handling in Android," in Proceedings of the 26th Annual Computer Security Applications Conference. ACM, 2010, pp. 221–230.
[4] A. Felt, M. F inifter, E. Chin, S. Hanna, and D. Wagner, "A survey of mobile malware in the wild," in Proceedings of the 1st ACM workshop on Security and privacy in smartphones.
[5] C. Dagon, T. Martin, and T. Starner, "Mobile Phones as Computing Devices: the Viruses Are Coming," IEEE Pervasive Computing, vol. 3, no. 4, 2004, pp. 11–15.
[6] Aijaz Ahmad Sheikh, Prince Tehseen Ganai, Nisar Ahmad Malik & Khursheed Ahmad Dar "Smartphone: Android Vs IOS", The SIJ Transactions on Computer Science Engineering & its Applications (CSEA), Vol. 1, No. 4, September-October 2013, pp. 141-148.
[7] Damianos Gavalas & Daphne Economou (2011), "Development Platforms for Mobile Applications: Status and Trends", IEEE Software, Vol. 28, No. 1, Pp. 77–86.
[8] Ibtisam Mohamed, "Android vs. iOS Security: A Comparative Study," 2015 12th International Conference on Information Technology - New Generations,pp.725-730
[9] Z. Kazmi, F. Toni, J. A. Vila, and M. M. Marcos, "TASAM-Towards the Smart Devices App-Stores Applications Security Management Related Best Practices," in New Technologies, Mobility, and Security (NTMS), 2012 5th International Conference on, IEEE, 2012, pp. 1-5.
[10] www.statistica.com
[11] Apple, (2014, Decemper 15), "iOS security," [Online], Available: http://www.cse.wustl.edu/ ~jain/cse571-14/ftp/ iOS_security.pdf.
[12] Mariantonietta La Polla, Fabio Martinelli, and Daniele Sgandurra, "A Survey on Security for Mobile Devices", IEEE Communications surveys and tutorials, accepted for publication.

 