

Attacks on Mobile Device: Classification and Comparison

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ABSTRACT

Nowadays, mobile device has become an integral part of our life, all the confidential data and information are stored in the mobile device. As the usage of device is increasing day by day so, as the attacks on mobile device are also increasing. There are three prime targets for attackers, first is the data, then the identity and availability. This paper states the classification of attacks on mobile device and the comparison between Android and IOS based mobile device.

Keywords: Mobile Device, Mobile attacks, Android, IOS.

I. INTRODUCTION

In today's world the technology is increasing day by day so the use of technology based devices are also increasing. One of the most used technology based device today is the mobile device. The mobile devices are versatile in nature as they can perform many task at the same time just like a computer [2]. As the computer consists of an operating system, the mobile devices also have an operating system. The operating system of a mobile phone is the software platforms which determine the functions and properties available on the device such as wireless, keyboards and many more. Some most popular mobile operating systems are Google's Android and Apple's IOS.

II. CLASSIFICATION OF MOBILE DEVICE

A mobile operating system is also called as mobile OS [2], these operating system are especially designed for mobile devices, tablets etc.

The classification of mobile device has been made on bases of operating system used. Broadly the mobile device has been classified into two:

- Android
- IOS

Android

Android is the mobile os introduced by Google which was based on Linux kernel [2]. Originally this operating system was developed by Android Inc. but now Google have owned it. The source code for android was generated by Google which was referenced under the open source license. Android operating system is an enhanced version of Linux kernel [3].

IOS

I-phone Operating System (iOS) is exclusively developed and distributed by Apple [3]. At present it is the most powerful operating system.

This operating system is accessible for Apple's own manufacture device only, as it does not license any

third-party. It is the second most favoured mobile operating system globally after Android.

As both the operating system are best in their own ways. But both of them have some of the advantages and disadvantages. And both the devices are prone to different types of attacks also [1].

III. FEATURES

Android

- ✓ Developer of these devices is Google.
- ✓ Belongs to the Linux family.
- ✓ Programmed in C, C++.
- ✓ It is an open source model.

IOS

- ✓ Developer of these devices is Apple.
- ✓ Belongs to OS X UNIX family.
- ✓ Programmed in C, C++, Objective C.
- ✓ It is a closed source model with open components.
- ✓ Better hardware and software integration.

IV. Types Of Attacks on IOS and Android Device

There are different types of attacks on android device as well as on ios device.

The attacker takes the advantages of the flaws present in the device [1].

Different types of attack on the devices are:

Malware

Malware is a type of program code or the software through which one can use the device without the permission owner[1]. Malware can be spread through the attachment in the mail or a malicious link of the website. Malware is broadly classified into different categories according to their features.

- Virus
- Worm
- Trojan Horse
- Botnet

A virus is the program code that reproduces itself. The copy of virus can infect the boot sector or files by attaching to them [1].

A worm is program code that replicates itself[1]. It is similar to the virus but with a little difference as virus requires a host file for spreading on the other hand a worm doesn't require such file.

Trojan Horse is a type of malware which looks like a software that provides useful service but instead of that it contains a program code that will harm the device[1].

Botnet is the collection of devices infected with the malware and allow the attackers to

control them[1].

| TYPES OF OS | DESCRIPTION | ADVANTAGES | DISADVANTAGES |
|-------------------------------------|--|---|---|
| IOS based mobile devices | I-phone Operating System (iOS) is exclusively developed and distributed by Apple | <ul style="list-style-type: none"> • No third party access which increases the security. • Sophisticated development. • Sufficient documentation. • They are more secure. | <ul style="list-style-type: none"> • It is more restricted. • Less user friendly. • No external storage. • Not an open source. • Not customizable. |
| Android based mobile devices | Android is the mobile OS introduced by Google which was based on Linux kernel | <ul style="list-style-type: none"> • They are more customizable. • Cheaper than IOS. • External storage. • More user friendly. • Removable or replaceable battery. | <ul style="list-style-type: none"> • Less secure than IOS • Third party access. • Less documentation. |

Table 1. Types of OS with their advantages and Disadvantages

These malware can be spread through sms, mms , pop-ups etc that contain the link to the site where the user can download these malicious code[1]. This type of attack can also be done through USB. In IOS device the malware attack was performed through USB named as mactans.

WIFI ATTACK

In this types of attacks the attacker try to intrude on wifi communications to obtain the username and password. The network are secured with the WEP key .The weakness is the WEP key is same for all the connected clients thus making it easy for the attacker to attack .

BLUETOOTH ATTACK

Bluetooth is the easy way to attack as it does not demand for authentication and thus the system becomes vulnerable also because it contain a serial port to control the phone . Blue borne is another name of Bluetooth attack. And for this type of attack attacker only need to connect to the port to take control over the device.

MAN IN THE MIDDLE ATTACK

In man in the middle attack the attacker intercept the data without coming into the suspension of the owner . This attack can be done through an application called zAnti. zAnti is the testing toolkit developed by Zimperium Mobile Security for cyber security professionals. This application can change the Mac address, creates a malicious wifi hotspot, hijacks http sessions etc.

| ATTACK NAME | DESCRIPTION | DEVICE IOS/ANDROID | TECHNIQUE USED |
|---------------------------------|--|---|--|
| MALWARE | Malware is the type of program code or software through which one can use others device without permission. | This attack can be done on Android as well as on IOS. | <ul style="list-style-type: none"> • SMS • MMS • POP-UP • USEB etc |
| WIFI ATTACK | In WIFI attacks the attacker try to intrude on wifi communications to obtain the username and password. | This attack can be found on both the devices . | Hacking the WIFI of the device. |
| BLUETOOTH ATTACK | Bluetooth is the easy way to attack as it does not demand for authentication and thus the system becomes vulnerable also because it contain a serial port to control the phone . | This attack can be found only on Android device. | Hacking the Bluetooth of the device . |
| MAN IN THE MIDDLE ATTACK | Man in the middle attack the attacker intercept the data without coming into the suspension of the owner . | This attack can be found only on Android device. | Through an app called zAnti |

Table2. Comparison Of Attack

V. CONCLUSION

With the rapid growing technology the attacks on the devices are also increasing that can not only harm our device but also takes the confidential information also. Both Android and Ios mobile devices are prone to attacks but Ios is more secure then android because the attacks on Ios mobile device is less as compare to android mobile device

VI.REFERENCES

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