Data Analysis of Android Malware

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Abstract

Smartphones are ubiquitous now more than ever. More specifically, the Android OS. With these up and coming new cellular devices capable of bringing new upgrades such as: high resolution camera, fast LTE speed data, and large memory storage, there are indeed drawbacks. Cellular devices can contain what is known as malware. This malware may damage and corrupt phone data as well as extract private information. Mobile malware is a rising field of study in computer science. Data analysis must be conducted in order to fully understand the cause and effects of such detrimental malware.

Background

Data Analysis on mobile malware is vast field of research. The research conducted for this program was to analyze folders containing numerous apk files (Android Package Kit) with possible malware samples. The end goal was to devise a scheme to display change in malware over time. The basis on examining these apk files was by the usage of known static analyzing tools. FlowDroid and Androguard were the tools used for this research; each tool was used to extract important features from the apk files.

Analysis

Androguard is a helpful tool in static analysis because one may mine data such as activities, permissions, and methods. This tool provides a strong foundation for reverse engineering, decompiling apk files, and providing a means to read Android xml files within the apk.

Yearly Top 5 Permissions

- ACCESS_WIFI_STATE
- DELETE_PACKAGES
- ACCESS_COARSE_LOCATION
- INSTALL_PACKAGES
- ACCESS_NETWORK_STATE
- SEND_SMS
- RECEIVE_SMS
- WRITE_EXTERNAL_STORAGE
- READ_PHONE_STATE
- INTERNET

Of the 17,801 permissions analyzed:
6,710 – Normal Permissions (38%)
8,072 – Dangerous Permissions (45%)
3,019 – Other (17%)

Discussion

There exist copious methods and procedures on evaluating and analyzing mobile malware. One feature, permissions, is a key aspect. The permissions display what android applications are able to access. One can see the list (lower left corner) of dangerous permission groups. Whether permissions are benign or threatening, one must be aware of what application he/she is installing since ambiguity exists as to what the application will undertake.

References

Arzt, Steven (N/d) soot-infoflow. Retrieved June 18, 2017 from https://github.com/secure-software-engineering/soot-infoflow


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