TESTING GROUND LABS

Android Malware Detection Test
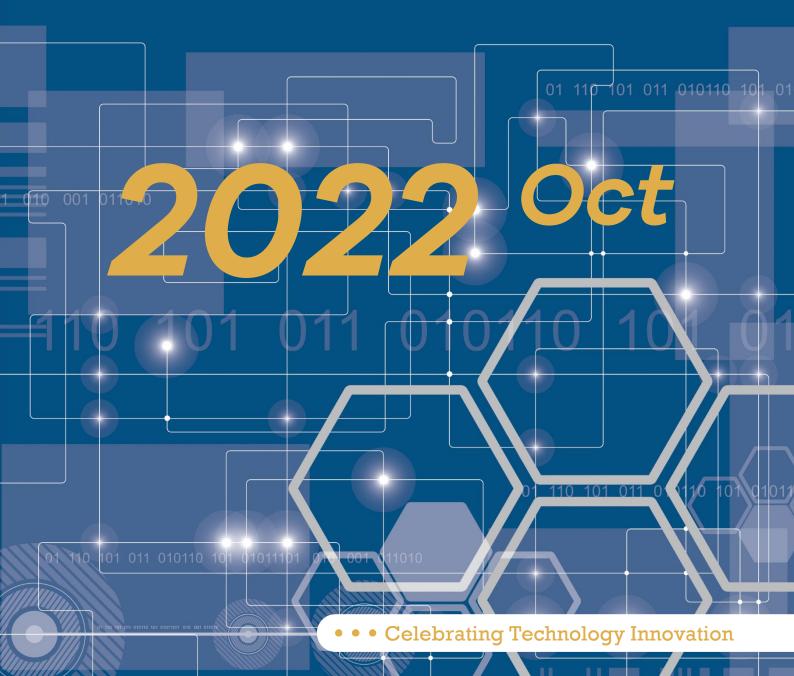
Consumer Product

2022 Oct

Celebrating Technology Innovation

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Chap.1 Background

Android is a mobile operating system developed by Google. It is based on a modified version of the Linux kernel and other open-source software, and is designed primarily for touchscreen mobile devices such as smartphones and tablets. In addition, Google has further developed Android TV for televisions, Android Auto for cars, and Wear OS for wrist watches, each with a specialized user interface. Variants of Android are also used on game consoles, digital cameras, PCs and other electronics. Android's smartphone share will hover with around 85% throughout the forecast. Volumes are expected to grow at a five-year compound annual growth rate (CAGR) of 1.7% with shipments approaching 1.36 billion in 2022. Android maintained its position as the leading mobile operating system worldwide in January 2022, controlling the mobile OS market with a close to 70 percent share. Google's Android and Apple's iOS jointly possess over 99 percent of the global market share. Overall this is a positive sign that consumers are seeing the benefits of moving to a slightly more premium device than they likely previously owned.

Aside from the clear advantages to build mobile devices on Android, the platform also introduces numerous security risks to the platform users. Among them the following malicious activities:

1. Send messages to "premium service" SMS numbers that cost extra money.
2. Send your personal information to unknown parties.
3. Turn your phone into a part of a botnet so others can execute commands remotely for nefarious purposes, such as spam, DDOS attack, and more.
4. Non-authorized persons may monitor your phone calls and text messages.
5. Open you to blackmail, if something embarrassing can be found and sent elsewhere.
6. Trick you into entering financial information, such as account number, birth date, and more.
7. Even stuff on your PC if you connect your PC to your smartphone.

Clearly, to protect user's system and the data from the listed threats and the others, Android-based security applications exist and their efficiency is to be evaluated regularly against the permanently evolving threats.

This test is designed to independently assess the efficiency of consumer security solutions for Android OS on detecting currently spread malicious mobile apps.

Chap.2 Test Process & Test Software

Detailed process is as follows:

1. Several Android based mobile devices are prepared and backup images are created then. Platform: Android 12 on XiaoMi 8.

2. 1893 malware samples and 467 different clean android applications installers are collected, and delivered in a mixed set to the internal storage of mobile devices. The malware is collected from multiple sources (including China region-based ones), clean apps are taken from Google AppStore and other legitimate app stores.

3. Install selected security applications on the physical mobile devices in default configuration.

4. Update the security applications and their antivirus bases.

5. Run full scan of the collection by the security application. Malware detection and false positive rates are recorded.

6. Install each missed malicious sample and then run each application, detection (if happened) will be recorded.

7. Installation process against clean apps will not be executed.

8. Test date: October, 2022.

Vendor	Software	Version
AhnLab	AhnLab V3 Mobile Security	3.5.1.2(Build 3954)
Antiy Labs	AVL for Android	2.8.3
Avast	Avast Mobile Security	6.52.2-510983-857830f90b
Avira	Avira Antivirus Security for Android	7.15.0 build No. 220808001
Dr.Web	Dr.Web Mobile Security Suite	12.8.3(2)
ESET	ESET Mobile Security	v. 7.3.19.0-15
Kaspersky	Kaspersky Security & VPN	11.89.4.8499
Malwarebytes	Malwarebytes for Android	3.11.1.113
McAfee	McAfee Mobile Security	6.11.0.508
NortonLifeLock	Norton 360 (Norton Mobile Security)	5.46.0.221011002
Total Defense	Total Defense Mobile Security	3.3.9

Chap.3 Tested Result (The test results are shown on the following tab)

Vendor	Total Samples	Missed Samples	Detected Samples	Detection Rate	False Positive Counts	Total Score
Avast	1893	0	1893	100.00%	0	100.00
Avira	1893	0	1893	100.00%	0	100.00
ESET	1893	0	1893	100.00%	0	100.00
Kaspersky	1893	0	1893	100.00%	0	100.00
McAfee	1893	0	1893	100.00%	0	100.00
NortonLifeLock	1893	0	1893	100.00%	0	100.00
Malwarebytes	1893	1	1892	99.95%	0	99.95
AhnLab	1893	2	1891	99.89%	0	99.89
Total Defense	1893	5	1888	99.74%	0	99.74
Dr.Web	1893	13	1880	99.31%	0	99.31
Antiy Labs	1893	0	1893	100.00%	365	27.00

- For each security solution, a Final Score is calculated once the full test is performed:
  Final Score = (Detection %) *100 - 0.2*FP
- Basing on the Final Score, the correspondent rating is grated to each participating security solution, in accordance with the tab below:

final score	monthly award
98.00 - 100.00	5-star rating
95.00 - 97.99	4-star rating
90.00 - 94.99	3-star rating

Chap.4 Test Summary & Monthly Award

- We had helped some vendors to fix crashes that we discovered during the test executing, and then we also had verified and confirmed the released fixes.
- Monthly Award:

2022 October	*Android Malware Detection Test from Testing Ground Labs*
Avast *Avira* *ESET* *Kaspersky* *McAfee* *NortonLifeLock* *Malwarebytes* *AhnLab* *Total Defense* *Dr.Web*	**5 Star Monthly Award 2022 October** **Consumer Product** TESTING GROUND LABS 2022.10 ★ ★ ★ ★ ★

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