

# EXHIBIT D

# Android Security 2017 Year In Review

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android



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Acknowledgements

# Overview

Smartphones and other connected devices improve lives around the world every day. People depend on connected devices to exchange messages, navigate from here to there, and take lots—and lots—of photos.

With more than 2 billion active Android devices, it's essential that Google provides the best protections for users at scale. We are committed to protecting users' privacy and security across different device types, such as smartphones, automobiles, wearables, TV, Things, and more.

Android security made a significant leap forward in 2017 and many of our protections now lead the industry.

We measure our improvement based on our own data about the Android ecosystem. We look at metrics, such as how many devices have installed Potentially Harmful Applications (PHAs), what protections they have in place, where PHAs are coming from, as well as third-party analysis and industry signals.

Third-party data also pointed to improved overall security. Platform exploitation difficulty, as measured by vulnerability rewards program payouts, independent security researcher analyses, and premier security vulnerability contest results, signaled that Android's protections have become significantly stronger. Exploit pricing is correlated to attacker cost, which is determined by many factors, including time, people, expertise, product knowledge, product accessibility, specialized equipment, and money. Growth in exploit pricing and difficulty demonstrates that Android has achieved a strength of protection that now leads the industry.

This is Google's fourth annual report on Android security. The report details improvements to Google's security offerings for Android, new and updated

Android platform features, metrics that informed our view of Android security, and security trends for Android devices in 2017.

In 2017, we improved Android security in a variety of ways, such as reducing the number of PHAs on devices and in Google Play, improving security visibility and control for users with Google Play Protect, and reducing vulnerability exploitation with faster security updates. To make these changes, we collaborated closely with device manufacturers, system on a chip (SoC) vendors, telecom carriers, and Android researchers and academics.

We hope that sharing this information gives you more insight into the state of security in Android, and our constant efforts to keep our users and their data secure.

## The best of Google security for Android

Android devices that only download apps from Google Play are 9 times less likely to get a PHA than devices that download apps from other sources.

While all Android devices benefit from protections built into the platform, Android devices with Google Play services have an additional layer of defense to keep them safe. Google protects these devices right out of the box with [Google Play Protect](#), our built-in device, data, and apps security scanning technology.

With nearly 2 billion protected devices, Google Play Protect is the most widely deployed mobile threat protection service in the world.

Google Play Protect includes on-device capabilities that protect users from PHAs in real-time and cloud-based services that analyze device and app data to identify possible security concerns. Google is constantly improving our tools and methods, applying new machine learning techniques, and updating our detection and response systems to protect against new vulnerabilities and PHAs. Because Google Play Protect doesn't rely on firmware or platform updates, Android devices benefit from our innovation right away.

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