How Google Play Works

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Executive Summary

In this report, you’ll learn the latest details about how Google Play supports and protects users and provides developers with a powerful global distribution platform, tools, and resources.

Key stats

• **2.5 billion active Android device users** and **2+ billion active monthly Google Play users**.

• **115+ billion installs** from Google Play in the past 12 months.

• Android App Bundle and Dynamic Delivery have helped **shrink app sizes by up to 65%**, driving increased downloads and fewer uninstalls.

• New Google Play Console tools have helped developers **reduce crash rates by up to 70%**.

• **30% increase in Google Play Store visits** over past year, thanks to discovery experience improvements.

• **Billions of apps** are scanned and analyzed to help maintain a safe ecosystem.

• **99% of apps** with abusive or malicious content are rejected before anyone can install them.
Key things to know

- We are focused on building powerful security features into every device.

- We are committed to providing a positive, safe, and fun environment for everyone, including children and families. Recent policy changes help further ensure that children’s apps and games have appropriate content, show suitable ads, and manage personally identifiable information (PII) correctly.

- We are dedicated to building tools that support digital wellbeing for all users, and make it easier for families to manage their online experiences. We’re also focused on increasing accessibility on apps and devices, with new accessibility apps, developer resources, and a Google Play Store redesign.

- Google Play Store search functionality is an important tool for helping users find the apps and games they’re seeking.

- Our suite of Google Play tools, training, and services helps developers optimize their products for users and reach a global audience for their content and experiences.

- Throughout 2018, we launched Google Play Store improvements to help developers reach more users and increase app quality, leading to reduced download size, improved stability, and better discovery.

- Google Play Academy for App Success is our free e-learning platform where global participants have engaged in 60,000+ activities, with most people learning on their mobile phone or tablet.

- Our Google Play developer policies are designed to ensure that we, in partnership with our global developer community, continue to deliver the world’s most innovative and trusted apps to users.
Introduction

With more than 2.5 billion active devices around the world (and growing), Android continues to thrive as an innovative and open mobile platform built for everyone.

With the help of Android’s Open Source Project, original equipment manufacturers (OEMs) have unlimited access to the source code needed to create custom variants of the Android OS and offer amazing, affordable devices to their customers globally. People worldwide now use their Android-powered devices and apps for countless everyday needs: They manage their finances, find transportation, connect with friends, enjoy entertainment, and order everything from food and medication to clothing, music, electronics, home goods, and much more from the mobile web and apps. Mobile devices have become essential tools in our lives, and Android makes it possible for everyone, everywhere, to have access to these devices.

The Google Play Store is Google’s global online digital content store, where we work to connect users to outstanding digital experiences by creating the best discovery and distribution platform. In 2018, there were over 2 billion active monthly Google Play users, and there were over 115 billion installs from the Google Play Store in the last 12 months. We offer a dedicated destination for users to find, enjoy, and share their favorite apps, games, movies, music, and books on their favorite devices: Android phones, Chromebooks, Android TV, Wear OS by Google, and more. Behind the Google Play Store is a suite of developer tools and services designed to help people who create and distribute their content and experiences on the Google Play Store optimize their products to meet their users’ needs, while reaching a global audience for their work.

In this report, you’ll learn the latest news and updates about how we continue to build an ecosystem that helps developers and users thrive.
Finding Success on Google Play

App and game developers are the engine of the Google Play Store, creating amazing digital experiences for Android users across the world.

We empower developers to do their best work and help them to succeed by investing in tools and resources that support their growth. Our global reach and distribution puts their apps and games in front of more than a billion Android users—but the real key to success is in how developers tap into this vast potential market. Our tools and services are designed to help them test, monitor, and iterate their apps and games to meet their users’ needs.

We help developers create lasting and more meaningful user connections with their apps and games through our testing and customer interaction tools, which enable developers to experiment in myriad ways to better engage users.

The Google Play platform helps developers react with agility and flexibility when improving the quality of their apps and games. Tools for staged rollouts, beta testing, and early warning alerts empower developers to create better user experiences.

Developers can accelerate their growth by working with us in areas where Google Play’s global scale and infrastructure are helpful. For example, we can help ensure that sellers can seamlessly and securely transact with customers across 150 countries.
We measure developer sentiment about Google Play every quarter. During 2018 we surveyed thousands of developers across 25 markets, and found that their satisfaction with our products and services consistently surpasses other platforms.¹

### Android App Bundle

For Android's first decade, the app publishing process has consisted of developers uploading their app as an APK (Android's app format) to Google Play. Google Play would then distribute the APK, precisely as the developer uploaded it, to each user's device when they installed it.

![Developer satisfaction: Google Play vs. other platforms](image)

<table>
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<th>Google Play</th>
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Over the years, the average size of apps has grown substantially, with developers adding new features to take advantage of the latest specs on Android devices. This app size growth has led to users often not having enough space to install new apps or get app updates. Releasing apps has also become a lot more complicated for developers since there are so many different types of devices to think about now with different devices types, shapes and sizes, screen densities, chip architectures,

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#### Impact of 2018 Google Play Store Improvements

Throughout 2018, we launched Google Play Store improvements to help developers reach more users and increase the quality of their app experiences, leading to:

- **Reduced download size:** Android App Bundle and Dynamic Delivery² have helped shrink app sizes by up to 65%, driving increased downloads and fewer uninstalls.
- **Improved stability:** New tools in the Google Play Console have helped developers reduce crash rates by up to 70%.
- **Better discovery:** Improvements to the discovery experience increased Google Play Store visits by 30% in 2018.

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¹ Source: Google Developer Sentiment Tracking survey, Q1 2018–Q4 2018. “Overall, how satisfied or dissatisfied are you with...” Percentages represent those who answered “Satisfied” or “Very Satisfied.” “Other Platforms” represents a weighted average of responses from users of other platforms.

capabilities, and so on. That’s why we launched the Android App Bundle (bit.ly/2ptguqH), a new publishing format for developers that includes all compiled code and resources. It also simplifies app releases and dramatically reduces their app size because it defers generating optimized APKs to Google Play.

Apps switching to the Android App Bundle have seen a 20-percent size reduction on average, and up to an 11-percent increase in installs because of these reductions. Such dramatic size savings would be difficult to accomplish through incremental optimizations.

The Android App Bundle also introduces next-generation capabilities such as app modularization and customizable delivery. Now, developers don’t have to deliver their entire app to every user upon installation. It’s unlikely that every user needs every feature, and they probably don’t need them all straight away. For example, developers can add a module with VR functionality to their app but only deliver it to VR-capable devices, so that other users don’t have to spend extra time downloading the app or waste device space.
In addition to relevance (to the search query or the user), the Google Play Store also personalizes app recommendations and non-exact title-match search results based on user engagement after installation. At Google Play, we believe that app engagement is a good indicator of user value.

We want users to have a unique, personalized Google Play Store experience every time they visit the store, and the search functionality in the Google Play Store is an important tool for helping users find the apps and games they’re seeking.

At Google’s 2019 I/O developer summit, we announced changes to how the developer Play Store rating is calculated. Google now calculates Google Play Store ratings for developers based on their app’s current quality, not its lifetime cumulative value. We believe this new calculation and rating will give app users more insight about the app, and a better understanding of its current state. This will also help developers as they improve the quality of their apps.

Google Play also aids user discovery and developer growth by curating relevant recommendations throughout an app or game’s lifecycle—from pre-registration, to launch, to post-launch live-ops and promotions. In fact, our investment in the curation process for the Google Play Store accounted for over 46% of all installs on the Google Play Store in 2018.
A Google Play Store for Everyone

We believe that everyone should have equal access to the benefits of mobile devices. But not everyone is able to use these devices easily. According to the World Health Organization, 15% of the world’s population—roughly one billion people—experience some form of disability.\(^3\)

Many of these disabilities impact the way people interact with technology, as well as with the world around them. It is important to us at Google Play and Android that everyone feels welcome and comfortable using their favorite apps and games.

We’re also dedicated to building tools that help people engage with the world around them more easily through their devices. We have released a number of our own apps to make Android devices more accessible, and also offer an Accessibility Suite app that includes an accessibility menu, and features such as Select to Speak, Switch Access, and a TalkBack screen reader.

One popular tool we offer is the Google Accessibility Scanner (bit.ly/2nNfddH), which uses the Accessibility Testing Framework (bit.ly/35CoWER) to suggest improvements for any Android app installed on a user’s device that can be implemented without technical skills. Anyone can download the Scanner from the Google Play Store, test their apps, and suggest changes to the app developers (or even make simple changes to the installed app themselves). The free tool provides actionable suggestions after looking at content labels, clickable items, contrast, and more.

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In addition, we’ve recently redesigned the Google Play Store for greater accessibility, including introducing a cleaner overall design which requires fewer steps to accomplish a task. We’ve also ensured better color contrast ratio (to benefit those with low vision), and added heading navigation (which is helpful for screen reader users). These improvements make it easier for everyone to enjoy a better overall Google Play Store experience.

We are committed to providing developers with tools, guidance, and support in order to promote inclusive experiences for as many people as possible. Whether developers are building apps to facilitate accessibility, or they’re working on making their app or game more inclusive for people with disabilities, we want to support them.

Our accessibility resource center (bit.ly/33zg9S8) for Android developers features a range of tools and documentation to assist our developers, including key principles for design and development. The getting started guide (bit.ly/2ORpErM) highlights the importance of combining manual, user, and automated testing to identify usability issues that developers might otherwise miss. In addition, we offer free introductory and advanced e-learning courses (bit.ly/2Bgim9a) in our Google Play Academy for App Success to help developers create more accessible apps.

We want to ensure accessible apps are promoted and celebrated throughout the Google Play Store. To help, we recently curated a collection of accessibility-related apps (bit.ly/2OWdzS2) and highlighted several of them in the 2019 Google Play Award in the “Best Accessibility Experience” category. And for Global Accessibility Awareness Day (GAAD) in May 2019, we featured a banner promoting “blind-friendly” games.

Global Payments and New Markets

At Google Play, our global mission is to make it easier for people around the world to access and enjoy the apps and games created by our developers, and for developers to build and scale truly global businesses.

That’s why Google Play provides a global digital payment infrastructure designed to make it easy for users to transact using the most relevant local payment methods, reducing friction in the buying experience regardless of location.

This global payment system also benefits developers tremendously because it ensures faster and easier payment for their apps and games no matter where their users are based.

Google Play offers gift cards to users in 875k+ retail locations and 177 direct carrier billing integrations in 66 markets, with credit card integration in 150 markets and digital services such as PayPal and 7 new locally preferred e-wallets across 15 markets—all while helping developers fight fraud.

We’re adding support in more markets, too. In 2019, we launched buyer support in 5 additional markets (now supporting buyers in 151 markets). Also in 2019, we launched seller support (bit.ly/2ITZctR) in 24 new markets, totaling 135 markets with seller support.
Google Play Academy for App Success

It can be challenging for developers to keep on top of changes in our tools, or sometimes just to know how to start building a successful app or game business.

The Google Play Academy for App Success (bit.ly/2XdeLTx) is a free e-learning platform for developers, business people, and marketers of Google Play apps and games. The courses are offered to anyone with a Google Account and are completely free of charge. Training in the Google Play Academy includes:

- How to use Google Play Console features, including tools to develop and release apps and games.
- Best practices for achieving success in an app or game business.
- Guidance for staying on the right side of Google Play policies.

Since the launch of the Google Play Academy for App Success at the Playtime 2018 event, we’ve seen the registered user base grow tremendously and have gained significant traction in emerging markets. Participants have engaged in 60,000+ learning activities, with most people learning on their mobile phone or tablet.
Google Play Academy for App Success
User Sessions by Country

- **36.24%** India
- **13.88%** Philippines
- **12.63%** Indonesia
- **11.53%** Vietnam
- **9.03%** Other
- **6.14%** Malaysia
- **4.72%** Thailand
- **2.16%** United States
- **1.52%** Bangladesh
- **0.64%** South Korea
- **0.55%** United Kingdom
- **0.48%** Brazil
- **0.48%** Japan
Preserving a Safe Environment for Everyone

Developer innovation is what drives our shared success, but with it comes responsibility.

To make sure that this high level of innovation is paired with high safety standards for users, we continually review and revise our Google Play developer policies, which cover topics ranging from bullying and harassment to device and network abuse.

Our Google Play developer policies (bit.ly/2MFvJF4) are designed to ensure that we, in partnership with our global developer community, continue to deliver the world’s most innovative and trusted apps to over 2 billion users. These policies apply to any content and/or functionality a developer’s app displays or links to, including any ads it shows to users and any user-generated content it hosts or links to.

We have a dedicated team of product policy specialists responsible for identifying new areas of policy improvement, based on factors like emerging user-safety trends and changes in the app ecosystem. Many of our experts have dedicated their careers to protecting users online. New developer policies (typically announced once a quarter), are the result of months of research and analysis related to the impact on both users and developers. Policies can be influenced by the work of policymakers, consumer advocates, and developers who share our passion for protecting users from harm online.

Once we launch a new developer policy, developers with existing apps typically have at least 30 days (and sometimes longer) to make any necessary changes, unless their app is updated following the launch of the new policy. After the grace period,
if a developer violates any of our Google Play policies, their app is removed or suspended from the Google Play Store, and the developer is notified by email about the specific reasons for this action. Repeated or serious violations of these policies (such as malware, fraud, and apps that may cause user or device harm) or of the Developer Distribution Agreement (DDA) may result in the termination of the individual accounts owned by the developer (and any related accounts).

Policy enforcement is an area of ongoing investment, and with over a thousand human reviewers and automated protections, we have significantly increased our ability to detect and remove malicious app developers from Google Play. We catch and remove the vast majority of policy-violating apps before they appear in the Google Play Store.

In 2018, for example, the number of rejected app submissions increased by more than 55 percent, and we increased app suspensions by more than 66 percent.

In addition to our longstanding practice of publicly announcing new developer policies, we’re sharing more and more information about our policy enforcement processes to help developers and the public better understand our work and its impact on the app ecosystem.
At Google Play, we focus on fostering this sense of safety across the ecosystem through privacy protections and user education.

**Protecting IP**

We respect the effort, time, and originality that developers put into producing excellent experiences for users. To help protect this work, the Google Play Store has rigorous policies and enforcement in place to address blatant piracy and app impersonation.

**Protecting User Devices**

We’re deeply committed to building powerful security features into every device. These aren’t tools that users have to find and enable on their own; they’re built in and working from day one. When security features function at their best, most users aren’t aware of them. They’re simply protected, automatically.

In 2017, we introduced [Google Play Protect](https://android.com/play-protect), Google’s built-in malware protection for Android devices. Google Play Protect and our systems scan and analyze billions of apps to keep our ecosystem safe for users and developers.

Google Play Protect applies a layered approach to protection. Each layer in the Android security model works together to form a strong defense that runs smoothly and effectively in the background.

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5. Source: Google internal research consisting of interviews with 40 developers and a survey of 2k responses

The main layers of Android security include:

- Operating system defense
- App safety defense
- Human research and analysis
- A security development lifecycle

Since launching Google Play Protect, we’ve made significant improvements in our ability to detect abuse—such as impersonation, fraud, or malware—through new machine learning models and techniques.

The result?

Now 99% of apps with abusive or malicious content are identified and rejected before anyone can even install them.7

Protecting the Google Play Store

We’re also continuing to run the Google Play Security Rewards Program (hackerone.com/googleplay), a bug-hunting bounty program offered by Google Play in collaboration with HackerOne which continues to expand.

The bounty program has now paid out more than $400,000 in rewards.

We keep our users and the general public updated on the latest Android and Google Play Store security features through our annual Android Security report and white papers we’ve produced with leading experts.

Protecting User Privacy

At Google Play, we’re dedicated to helping users understand and make informed decisions about the data that apps and games seek to access on their devices. As part of that commitment, we have long required developers to disclose how they collect and use personal data in their Google Play Store app listings.

When we launched Android Marshmallow in 2015, we introduced runtime permissions, which allow users to see, grant, and revoke permissions for apps at a granular level, at any time, on their devices. Before we launched runtime permissions, users could

only grant these permissions once, before an app was installed on a device (and those permissions couldn’t easily be revoked later). Runtime permissions make it simpler for people to understand and control how their data is accessed and used on their devices after an app has been installed.

Following the launch of runtime permissions, we worked closely with developers to make necessary changes and produce best practices for developers.

**SMS and Call Log Permissions**
With Google Play and Android, we’re doing more and more to help users protect their sensitive data. As part of that effort, in 2018 we began looking at the permissions developers are granted to access specific data.

We started by focusing on changes to SMS and Call Log permissions. Google Play now limits which apps are allowed to ask for these types of permissions from users. With a limited number of exceptions, only an app that has been selected as a user’s default app for making calls or text messages will be allowed to access the call logs and SMS logs. We understand that sometimes these kinds of changes affect the features that developers offer in their apps, and we work with developers on alternatives where possible. As a result of our work, the number of apps with access to call logs and SMS data has decreased by more than 98 percent. The vast majority of impacted apps were able to switch to an alternative or eliminate minor functionality. We will soon be rolling out additional developer guidance for each of the remaining runtime permissions.

We focus relentlessly on security and privacy in Google Play Store apps and games to ensure that Android users have a positive experience while discovering and installing the apps and games they’ll love. We’ll continue to keep users and developers informed as we enhance security on the Google Play platform.

**Protecting Families**
We are committed to providing a positive, safe, and fun environment for children and families. Over the last few years, we’ve helped parents find family-friendly content through the Designed for Families (play.google.com/about/families) program. We also empower them to set healthy digital ground rules with Family Link (families.google.com/familylink) parental controls.

After hearing from users and developers, we’ve continued to evolve our Google Play policies to provide additional protections for children and families. In May 2019, we announced policy changes that build on our existing efforts to help ensure that apps and games for children have appropriate content, show suitable ads, and manage personally identifiable information (PII) correctly. These new policies also help reduce the chance that apps and games not intended for children could unintentionally attract them. To support this effort, we ask every developer to

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thoughtfully consider whether children are part of their target audience and to fill out the new Target Audience and Content section of the Google Play Console (bit.ly/2BewI9Z). We increased our review capacity to cover all apps submitted to the Families program as well as those that are not submitted to the program, but may attract the interest of children.

As part of our mission, we'll continue to evolve our policies and products to ensure a safe, trustworthy experience for everyone, including children and families.

Family Link
We wanted to make it easier for families to manage their usage, too. Our 2019 Digital Wellbeing of Families research report found that 67% of parents worry about how much time their children are spending on devices. Over the past two years, we’ve helped families across the globe set digital ground rules with the Family Link app, a tool that lets parents create and supervise Google Accounts for their children and manage the content they see online and the amount of time spent on their devices. To make it easier for parents to manage their children’s online experiences, we recently announced that we’re adding Family Link to every Android device, starting with those running Android Q. Family Link will be accessible from device settings, making setup even easier for families.

A majority of the apps and games available in the store are free to users, and therefore the developer is only required to pay a small registration fee to verify their account and prevent spam. If a developer decides to charge for the product distributed through the Google Play Store, they will pay a service fee to Google for each purchase made. This fee helps Google maintain its heavy investment in Google Play and Android, the tools provided for developers, and services for users.

At Google Play, we host and serve APKs for developers to ensure that the right apps and updates are served to the right user on the right device. We do all of this while also reducing the size of downloads and minimizing the user’s data costs. In 2018, Google Play served more than 12 million terabytes of data to consumers worldwide. To understand this scale,

1 terabyte = 500 hours worth of movie data

While it has been a decade since the launch of Android, the Google Play Store remains dedicated to providing powerful tools to developers that help them build quality apps and games, and market and distribute them to potentially billions of users around the world.
Netmarble: Powerhouse of the Global Game Market

“We worked with Google Play to build localization strategies for services and marketing; this helped us become very successful in the global market.”

—Derek Younghoon Oh, head of business development at Netmarble

Established in South Korea in 2000, Netmarble (bit.ly/31hPwjd) is one of the fastest-growing mobile game companies and consistently ranks as a top mobile developer and publisher worldwide. Netmarble has been producing and servicing some of the most successful mobile games, including Lineage 2: Revolution, Blade & Soul Revolution, Marvel: Future Fight, Everybody’s Marble, and Seven Knights. In 2019, Netmarble launched King of Fighters: Allstar, Seven Deadly Sins: Grand Cross, and BTS World.

Recently, Netmarble has been collaborating closely with Google Play on co-marketing, pricing, and localizing their games. Lineage 2: Revolution, one of Netmarble’s major hits, is available globally and is popular in mainstream markets, including North America, Japan, and Europe, as well as in emerging markets in Asia, the Middle East, and South America.
Jagex: Bringing a 20-year-old PC Game to Mobile Successfully

“We’ve always known mobile was a place we needed to go—there was a huge appetite from the community. It was exactly what they wanted. They wanted their favorite game available wherever they are on the go. [And if you] get it right and bring the users with you, they’re going to love you forever.”

—Phil Mansell, CEO, Jagex

RuneScape is a fantasy adventure game that has delighted dedicated fans on PCs for nearly two decades. The developer team at Jagex knew that the millions of players around the globe were hungry to continue playing and engaging with this world, but also that the play lifestyle of this audience has evolved to include raising children and working full-time jobs. It was crucial to deliver an optimized experience on mobile.

Jagex, which is based in Cambridge, England, used Google Play Console’s closed beta technology to test and discover what works best for their growing audience, as well as targeted subscription user flows for different segments of new and returning users. Not only was Old School RuneScape (bit.ly/2OQ2C4t) the #1 top free game in the Google Play Store within three days of its launch, but it also brought a beloved, nostalgic adventure back to millions of fans around the world.

Duolingo: Reducing Download Size with App Bundles Without Slowing Development

“App Bundles helped us save app size without slowing down our development. Transitioning to the Android App Bundle was easy—all we had to do was add support to upload app bundles. We only had to change a couple lines of code.”

—Bob Meese, Chief Revenue Officer, Duolingo

Based in Pittsburgh, Pennsylvania, Duolingo (bit.ly/2Mjh6Iy) is on a mission to make language education universally accessible. With a small team of 170, they’ve been able to reach hundreds of millions of people worldwide and offer free courses in over 30 languages. With Duolingo’s usage growing significantly in emerging markets, they need to make sure they can provide a high-level experience on entry-level Android devices with limited storage.

By using Android App Bundles, Duolingo reduced its download size by 56 percent, from 46MB to 20MB, without sacrificing functionality or the need to implement multiple APKs, which would require substantial changes to their build scripts. Encouraged by this size reduction, they are exploring splitting their app bundles by language, which will result in further size savings.
Evino: Wine E-tailer Increases Installs with Google Play Instant and Drives Conversions with Google Pay

“It’s a great [feature] that we don’t have on any other platform. Google Play Instant helps us activate leads and bring in new clients.”

—Luis-Daniel Alegría, Chief Product Officer, Evino

Brazilian online wine seller Evino (bit.ly/35EhNDO) is on a mission to make high-quality wine affordable to everyone, and that includes helping people discover a wide variety of new choices. They also want to ensure accessibility, so that those with mobile devices with limited storage can still benefit from their vast wine selection. When the team noticed that the payment process was unnecessarily complex and, more importantly, adding too much code that ultimately increased app size, they knew this could be a problem for users with device storage restrictions.

By switching to Google Play Instant and reducing the app size by implementing Google Pay as their payment system, Evino yielded a 51-percent purchase conversion rate for new buyers coming from the instant app. Now, with more than a million app customers, Evino is not only evolving the wine-buying experience, but also helping a growing community of passionate enthusiasts discover great new wines.
Conclusion

Google Play: All Are Welcome to Play and Grow

At Google Play, we’re committed to providing a safe and engaging experience for developers and users around the world who upload, download, and stream amazing apps, games, books, and movies every day. Creating a global platform with access for all and providing useful tools for developers has been our goal since we launched the very first Android device.

As content and our devices evolve, so will the Google Play Store, and we look forward to bringing developers and users the very best digital discovery and store experience. At Google Play, all are welcome to play and grow.

To learn more, please visit our How Google Play Works report site at: android.com/play/how-google-play-works.