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Twelfth major version of the Android mobile operating systemOperating systemAndroid 12Version of the Android operating system Android 12 Android 12LScreenshots with Pixel LauncherDeveloperGoogleOS familyAndroidGeneralavailabilityOctober4, 2021; 4 years ago(2021-10-04) (on emulated devices)October19, 2021; 4 years ago(2021-10-19) (on Pixel 6 & Pixel 6 Pro)March29, 2022; 3 years ago(2022-03-29) (on Android 12L)Final release12.0.0_r69 (SSV1.210916.103)[1] / March3, 2025; 8 months ago(2025-03-03)Final previewBeta 5 (SPB5.210812.002) / September8, 2021; 4 years ago(2021-09-08)Kernel typeMonolithic (Linux)Preceded byAndroid 11Succeeded byAndroid 13Official websitewww.android.com/android-12/ Support statusUnsupported as of March 3, 2025[2] Google Play Services supported[3]Android 12 is the twelfth major release and 19th version of Android, the mobile operating system developed by the Open Handset Alliance led by Google.[4] The first beta was released on May 18, 2021. Android 12 was released publicly on October 4, 2021, through Android Open Source Project (AOSP) and was released to supported Google Pixel devices on October 19, 2021.[5][6][7]As of November2025[update], Android 12 is the 4th most widely used version of Android, with 10.9% market share (slightly behind Android 13),[8] with 682 million devices. The first phones to have Android 12 were the Google Pixel 6 and 6 Pro.Android 12's Developer Preview logoAndroid 12 (internally codenamed Snow Cone)[9] was announced in an Android blog posted on February 18, 2021.[10] A developer preview was released immediately,[11][12] with two additional ones planned the following two months. After that, four monthly beta releases were planned, beginning in May, the last one of them reaching platform stability in August, with general availability coming shortly after that.[13]The second developer preview was released on March 17, 2021,[14] followed by a third preview on April 21.[15] The first beta build was then released on May 18, 2021.[5] It was followed by beta 2 on June 9,[16] which got a bug-fix update to 2.1 on June 23.[17] The third beta was released on July 14,[18] getting a bug-fix update to 3.1 on July 26.[19] Beta 4 was released on August 11, 2021.[20] A fifth beta, not planned in the original roadmap, was released on September 8, 2021.[21] Android 12's stable version was released on the Android Open Source Project on October 4 before getting its public over-the-air rollout on October 19, coinciding with the launch event for the Pixel 6.[6][22]In October 2021, Google announced Android 12L, an interim release of Android 12 including improvements specific for foldable phones, tablets, desktop-sized screens[23] and Chromebooks, and modifications to the user interface to tailor it to larger screens. It was planned to launch in early 2022.[24][25] Developer Preview 1 of Android 12L was released in October 2021, followed by Beta 1 in December 2021, Beta 2 in January 2022, and Beta 3 in February 2022.[26] The stable version of Android 12L was released for devices with large screens on March 29, 2022, along with the redesigned Chrome logo and icon. It was released as "Android 12.1" for Pixel smartphones on the same date beside the Pixel 6 and Pixel 6 Pro.[27]See also: Android version history Android 12Android 12 introduces a major refresh to the operating system's Material Design language branded as "Material You", which features larger buttons, increased use of animation, and a new style for home screen widgets. A feature, internally codenamed "monet",[28] allows the operating system to automatically generate a wallpaper color theme (basic color theme for Android 12.1/12L) for system menus and supported apps using the colors of the user's wallpaper.[29][30]The smart home and Wallet areas added to the power menu on Android 11 have been relocated to the notification shade, while Google Assistant is now activated by holding the power button.[29] Android 12 features native support for taking scrolling screenshots.[29][31]The screen magnifier feature now allows partial magnification via a floating window, and can also be configured to follow text inputs.[32][33]A splash screen is automatically generated for every installed app, which can be customised by app developers.[34] The Core Splashscreen Jetpack library backports this functionality for older Android versions.[35]On Android 12.1/12L, the quick buttons were moved to the bottomright corner of the screen. Also, it brought many changes to the lock screen clock. It moved from left of the screen horizontally to the center of the screen stacked.[citation needed]Performance improvements have been made to system services such as the window and package managers.[29][31] The Android Runtime has been added to Project Mainline, allowing it to be serviced via Play Store.[31]Android 12 adds support for spatial audio, MPEG-H 3D Audio, and supports transcoding of HEVC video for backwards compatibility with apps that do not support it.[31] A new API known as HapticGenerator allows the OS to generate haptic feedback from audio on compatible devices.[36]A "rich content insertion" API eases the ability to transfer formatted text and media between apps, such as via the clipboard.[31] Third-party app stores now can update apps without constantly asking the user for permission.[37]OS-level machine learning functions are sandboxed within the "Android Private Compute Core", which is expressly prohibited from accessing networks.[29]Apps requesting location data can now be restricted to having access only to "approximate" location data rather than "precise".[29] Controls to prevent apps from using the camera and microphone system-wide have been added to the quick settings toggles. 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There used to be a lot more, but now pretty much every major mobile device runs one or the other. This is a site with Android in its name, so we might have visitors wondering: What is Android? Thats a huge question, and well answer it as thoroughly as possible here!Even if youre a smartphone pro, there could be a lot to learn in the sections below. But if youre new to the world of smartphones or just the world of Android this is the perfect place to get up-to-speed on the worlds most popular operating system.What is Android? Here are the basicsDavid Imel / Android AuthorityAndroid is a mobile operating system that has been around for nearly 15 years. Youll primarily find it as the base operating system of phones and tablets worldwide. Additionally, other operating systems natively support Android applications, including Chrome OS and Windows 11.Android is by far the worlds most popular operating system. GlobalStats Statcounter puts Android in the lead in mobile OS market share with a 69.74% as of January 2022. This dwarfs Apples iOS by a significant margin, which is the second-most-popular mobile operating system globally at 29.49%.There are over 2.6 million applications available from the official Google Play Store, but you can also sideload apps from the web. This variety makes these phones very powerful and customizable but also susceptible to viruses and other types of malware.If you dont know what some of these terms mean, dont worry: were going to explain everything in more detail!What is an operating system?Jimmy Westenberg / Android AuthorityIf you ask, What is Android? youre likely to hear back, Its an operating system. That answer is only helpful if you know what an operating system is!In brief, an operating system is computer software that works to integrate hardware and software resources. It allows for different types of hardware to work together while simultaneously providing a platform for various bits of software to work with that hardware and, consequently, other pieces of software.Related:What is an SoC? Everything you need to know about smartphone chipsets.If thats still confusing, think of the analogy of a stage play. To put on a play, youll need a stage, lights, microphones, and other pieces of hardware. Youll also need actors, stage crew, ushers, and other workers, which would be analogous to software. In this analogy, the plays director would be similar to an operating system, as he would act as a conduit that instructs everything on how to work together. Without the director, youd just have a ton of unused hardware with a bunch of people running around with no idea what to do.In the case of smartphones, Android acts as the director for the unique hardware in your phone and the apps youve chosen to install.Where youll find Android from phones to smartwatchesEric Zeman / Android AuthorityWhen most people think of Android, they think of phones. While its true that most devices are smartphones, there are plenty of other devices out there with Android on board.It also appears on smartwatches. If you own a watch that runs on Wear OS, that is an Android-based operating system. What is an Android-based operating system? Thats when someone takes Android and tweaks it to make it something different but still based on the same core code.Android doesn't just appear on phones. There are a whole lot of systems on which you can find it.There is also a TV platform, appropriately called Android TV. We also cant forget about Android Automobile, an Android-based software that powers vehicles. However, dont confuse this with Android Auto, a way for smartphones to integrate with dash systems in cars.Finally, other operating systems out there are not based on Android, but do support running its apps. Recent versions of Chrome OS allow for this. That means nearly all Chromebooks on the market also support Android apps. Starting in late 2021, Windows 11 will also support Android apps.The early beginnings of AndroidThe T-Mobile G1/HTC DreamBelieve it or not, this software was designed for cameras. Andy Rubin and his team developed Android beginning in 2003 by using core code from Linux, another open-source operating system. The idea was to make a universal operating system that all camera companies could use.However, during the later development of the OS, Rubin realized that smartphones were the future. He decided to revamp it as a smartphone operating system instead. The idea didnt attract much investment since Windows Phone, Symbian, and other phone operating systems were already dominating the market. Rubin and his team almost stopped development when they ran out of money.Related:Did you know that Windows 10 Mobile (almost) supported Android apps?In the end, a generous monetary gift from a friend kept the team going, and Google swept in and bought Android for about $50 million in 2005. The Android team worked under Google to develop an operating system that worked well on mobile phones with physical buttons and full QWERTY keyboards.However, the arrival of the iPhone in 2007 forced the team to go back to the drawing board. They revamped Android again to also work with touchscreens. This resulted in the HTC Dream, also known as the T-Mobile G1, the very first commercial Android phone. It had a touch screen and a QWERTY keyboard, as seen above.Since then, there have been thousands of phones, and it is now the most popular operating system in the world.Android is open source, but what does that mean?When something is open source, it means the copyright owner allows its use for any purpose, without any need for financial remuneration. As mentioned earlier, the core code of Android is based on open-source software called Linux. This means that Android, by definition, must also be open source.To better understand this, lets look at the opposite: closed-source software. Apples iOS is closed source, which means that no one can use it unless the copyright holder in this case, Apple gives permission. If you were to obtain the source code of iOS and release it on any device, Apple could sue you for infringement on its ownership.See also: The best open-source apps for AndroidWith open-source software, this limitation is gone. Instead, the person or company using the software simply needs to abide by a set of rules related to the licensing of that software. Our own Gary Sims explains these rules in the video above. In brief, this means that their new software must also be open source, and they must make the code readily available to anyone who would like to use it.The open-source nature is one of the main reasons it is the most popular operating system in the world. Since anyone can use it for free, its incredibly easy for companies of all sizes to create terrific products without needing to invest in creating their own operating system. This is why you find Android in all manners of electronics from different brands.You might be wondering why Google is OK with giving away this product for free. The explanation is actually pretty simple; some aspects of Android you use on your phone are not open source. As youd imagine, these are some of the most vital apps and services made for Android.What is Androids Google Play Service?Mika Baumeister / UnsplashThe core of Android is open source, which we call stock or vanilla. This software lands as part of the Android Open Source Project (AOSP). This is Android in its purest, most basic form.However, the Android you get with almost all smartphones has tons of other software incorporated that is not open source. Most of this software falls under a system called Google Play Services. This brings Google-branded products to Android, including the Google Play Store, Gmail, YouTube, etc.Related: What is Androids Google Play Services?In other words, you can use AOSP software all you like for free, but you cant use Google all you want. Like Apples tight control of iOS, Google tightly controls Google Play Services. To use it, you need a license and to agree to let Google earn money from your products.Android might be open-source, but Google's very lucrative ecosystem certainly isn't.Even though most of the world closely associates Google and Android, there are plenty of Android-based devices out there without Google Play Services. For example, Google does not allow most of its products in China. If you go there, you can easily find Android phones without Google. There will be app stores, apps, and all sorts of familiar features, but not from Google. A more US-centric example would be Amazons Fire tablets, which utilize a custom version of Android called Fire OS that substitutes Google apps for Amazons in-house options.Throughout most of the world, though, Google is inseparable from Android. This is by design. Androids dependence on Google earns the company billions.Who maintains the OS?C. Scott Brown / Android AuthorityThe answer to this question has a few facets. In brief, Google employees maintain the core experience. They are responsible for adding new features, updating old ones, and ensuring Android follows open-source principles.However, theres more to it than that. Most manufacturers also skin the operating system, which means they create their software that lives on top of Android. This is why the Android you find on a Samsung phone and the software you see on a OnePlus phone function similarly but look very different. Each manufacturer maintains its Android skin.Theres also the question of distributing Android. Obviously, your phone comes with a version of Android when you first take it out of the box. But how does it get updates? Depending on how you bought the phone, an update could need to pass through multiple rungs. First, it needs to come from Google. Then, it needs to get tweaked by your phones manufacturer to make sure the skin still works well. Then, it may need to go through your carrier, because it also usually customizes phones it sells.Also consider: The best launchers availableThis long chain of events is one of the big reasons Android phones dont see updates as often or for as long as iOS devices. For iPhones, Apple controls everything. There are no skins, and carriers have little ability to interfere with how iOS looks and works. In essence, Apple can push an update to every iPhone around the world quickly and easily with little influence from carriers or other companies. Android phones dont have this luxury; some get close, though.Googles Pixel phones are updated directly from the search giant, have no modified UIs, and are always the first to get newer software versions. Google also promises Android software updates for at least three years after a phone is launched. These devices also get a five-year commitment for security updates.Android versions: A brief historyEdgar Cervantes / Android AuthorityAs of today, there have been 19 versions of Android, with 12 major releases. The most recent stable version of the operating system isAndroid 12. Android 13 is currently in the works, and we should expect to see its launch around August 2022.Initially, Google named Android after sweet treats. Each treat name happened in alphabetical order, starting with the letter C in 2009. However, Google abandoned this trend in 2019 with Android 10.Here are all the major Android releases:2009 Cupcake (v. 1.5)2009 Donut (v. 1.6)2009 Eclair (vs. 2.0, 2.0.1, and 2.1)2010 Froyo (vs. 2.2 through 2.2.3)2010 Gingerbread (vs. 2.3 through 2.3.7)2011 Honeycomb (vs. 3.0 through 3.2.6)2011 Ice Cream Sandwich (vs. 4.0 through 4.0.4)2012 Jelly Bean (vs. 4.1 through 4.3.1)2013 KitKat (vs. 4.4 through 4.4W.2)2014 Lollipop (vs. 5.0 through 5.1.1)2015 Marshmallow (vs. 6.0 through 6.0.1)2016 Nougat (vs. 7.0 through 7.1.2)2017 Oreo (vs. 8.0 and 8.1)2018 Pie (v. 9.0)2019 Android 102020 Android 112021 Android 12Android 11 introduced several new messaging, privacy, security, and accessibility features. However, it looked mostly the same as Android 10, and Android 9 Pie before it.With Android 12, we saw Google totally revamping how the operating system looks and feels. There are also even more features and controls related to privacy and security.Android 13 wont see that huge of a redesign, but so far, weve seen plenty of great added features. These include improved security functions, better Material You theming, per-app language options, programmable shaders, and more.If you are curious which version of you have on your device, head to Settings > About phone > Android version.Apps: How you can get themEdgar Cervantes / Android AuthorityAssuming you have a device with Google Play Services on board, the easiest and safest way to get Android apps is to use the Google Play Store. This comes pre-installed on all Google-supported phones, tablets, and other devices. Just open the app and search for whatever game, program, media, or other product youre looking for. Many of them are free, but some will require payment.Best apps lists: If you dont have a device with Google Play Services, you likely have access to a different app store. The most common example of this is Amazon devices, which come with a pre-installed Amazon App Store. Another example is modern HUAWEI devices, which will have App Gallery. Consult your devices manufacturer if you are unsure which app store you should be using.Regardless of your devices particular app store, you can also manually install apps by downloading them from the open web. This is called sideloading. Generally, this practice is safe. However, there is an inherent security risk to sideloading apps as they do not need to meet the safety requirements enacted by app stores. As such, you should only sideload apps from trustworthy sources.See also:How to install third-party apps without the Google Play StoreAndroid vs iOS: The mobile OS battleDavid Imel / Android AuthorityWeve already touched a few times on what makes Googles OS different from Apples iOS. However, we want to point out that the two operating systems have become much more similar than different over the years.In the early days of the smartphone industry, Android and iOS were wildly different. Each OS offered features the other didnt. They also didnt look at all similar. This dichotomy created an Android vs iOS culture that still pervades today.Really, though, there are only a handful of things Android can do that iOS cant (and vice versa). Google and Apple have been cribbing from each other so much over the years that the two operating systems are closer than ever.Even after 10 years, the Android vs iOS war rages on, even though both systems are very similar nowadays.The only distinct difference between the two is how much control Apple has over iOS and how Google doesnt have that same level of control over its mobile OS. For example, it is impossible to sideload apps on an out-of-the-box iPhone, and theres only one app store (the Apple App Store). Apple also tightly controls the kinds of apps developers can make for iPhones.By contrast, weve already discussed how easy it is for you to install Android apps from other stores or even from the open web. Additionally, Google allows you to choose which apps you use for pretty much every smartphone function, from your browserto your messaging apps to your keyboard.The advantage to Apples model is that iOS is more uniform, safer, and allows devices to see updates for long periods. The downside, of course, is that the user doesnt have as much say as to what they can do with their device. Are you moving from an iPhone to an Android? We have a guide to help you with the process, and then you can start looking at Androids most remarkable features. It would help if you also playedaround with the settings to improve your experience.Thank you for being part of our community. Read ourComment Policy before posting. Today, were bringing you Android 16, rolling out first to supported Pixel devices with more phone brands to come later this year. This is the earliest Android has launched a major release in the last few years, which ensures you get the latest updates as soon as possible on your devices.Android 16 lays the foundation for our new Material 3 Expressive design, with features that make Android more accessible and easy to use. Lets take a look at whats new:Streamlined and up-to-date notificationsWaiting for your food delivery to get to your house? Instead of opening your delivery app every 5 minutes, live updates keep you informed in real-time. These live updates are starting with compatible ride-share and food delivery apps. Were working together with these app partners to bring this capability to the Android ecosystem, including in Samsungs Now Bar and OPPO and OnePlus Live Alerts. Were also force-grouping notifications that come from a single app to help reduce information overload. Your notifications will automatically be grouped together to keep things looking tight and organized. Android 16 provides significant enhancements for people who use hearing aids 1. Current LE audio hearing devices use their built-in front-facing mics for audio input. Those mics are designed to pick up the sound of the person you're speaking to not the sound of your voice. Now you can switch to using your phone's microphone for clearer calls in noisy environments. Were also releasing native control for hearing devices in Android 16 for easier access and a more consistent experience. This means you can now control things like volume on your hearing devices right from your Android phone. With Android 16, you can now activate Advanced Protection 2, Googles strongest mobile device protection. It enables an array of robust device security features that protect you from online attacks, harmful apps, unsafe websites, scam calls and more. Whether youre a public figure or you just prioritize security, Advanced Protection gives you greater peace of mind that youre protected against the most sophisticated attacks. Samsung DeX has helped maximize productivity on phones, foldables and tablets for years. In Android 16, we worked closely with Samsung to develop desktop windowing, a new way to interact with your apps and content on large-screen devices. In addition to the single app and split-screen modes, you can open, move and resize multiple app windows in a single screen, just like a desktop. This makes it easier to work across apps. Android 16s desktop windowing will roll out later this year on compatible devices. Later this year, were also launching custom keyboard shortcuts, so you can create your own combination of hotkeys, and taskbar overflow, which provides a simple, visual way for you to find the app you need when the taskbar is full. Future updates will also bring even more productivity enhancements to Android, allowing you to connect tablets and phones to an external display for an expanded desktop experience, and developers can begin testing those features starting today. There are many more features to explore with Android 16 like HDR screenshots, adaptive refresh rate, identity check and others as well as additional updates coming to Android and Pixel devices today. And later this year, more Material 3 Expressive design updates are coming to Android 16 and Wear OS 6 on Pixel devices.See all the Android 16 features at Android.com/16. Technology thats useful. For everyone. Everyone has their own way of using their devices. Thats why we build accessible features and products that work for the various ways people want to experience the world. Screen readers, sound mufflers, even AR walking guides. Because when it comes to technology, theres no one-size-fits all.for everyone carousel click'} role=group aria-label=Carousel of articles, links or videos with additional information>

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