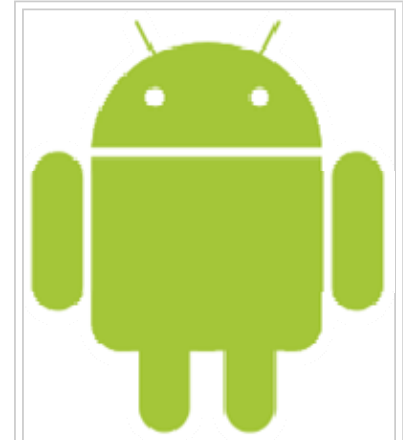


# EXHIBIT D

# Android version history

From Wikipedia, the free encyclopedia

The version history of the Android operating system began with the release of the Android beta in November 2007. The first commercial version, Android 1.0, was released in September 2008. Android is a mobile operating system developed by Google and the Open Handset Alliance, and has seen a number of updates to its base operating system since its original release. These updates typically fix bugs and add new features. Since April 2009, each Android version has been developed under a codename based on a dessert or sweet treat. These versions have been released in alphabetical order: Cupcake, Donut, Éclair, Froyo (frozen yogurt), Gingerbread, Honeycomb and Ice Cream Sandwich. The pre-release versions of Android were dubbed Astro and Bender, but these names could not ultimately be used for trademark reasons.<sup>[1]</sup> The most recent update to the Android OS was Ice Cream Sandwich v4.0.4, which was released in March 2012.<sup>[2]</sup>

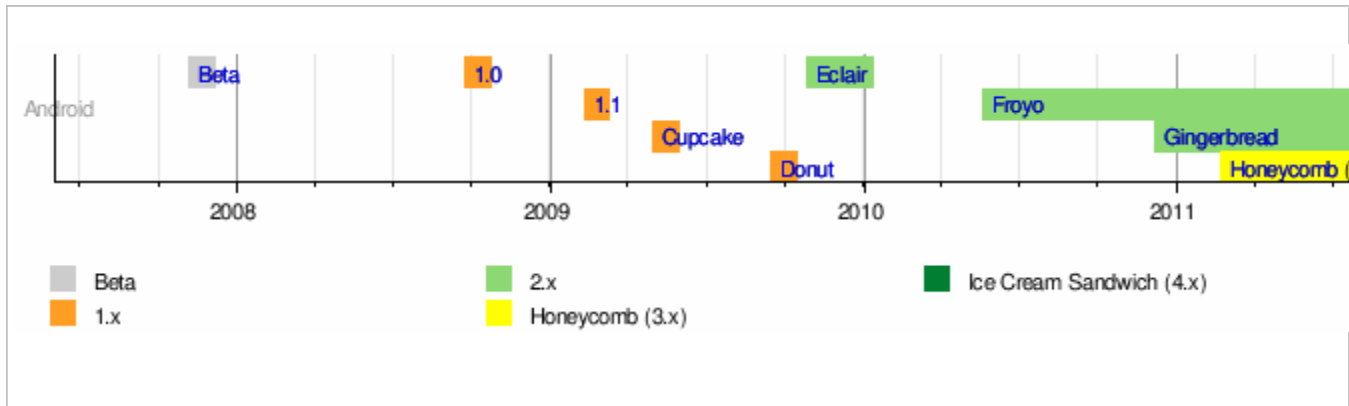


The Android logo, featuring a stylized green robot.

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## Timeline of Android OS versions



### Android beta

The Android beta was released on November 5, 2007,<sup>[3][4]</sup> while the software developer's kit (SDK) was released on November 12, 2007.<sup>[5]</sup>

### Android 1.0

Android 1.0, the first commercial version of the software, was released on September 23, 2008.<sup>[6]</sup> The first Android device, the HTC Dream,<sup>[7]</sup> incorporated the following Android 1.0 features:



The HTC Dream introduced Android 1.0.

<b>Version</b>	<b>Release date</b>	<b>Features</b>
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1.0

September 23, 2008

- Android Market application download and updates through the Market app
- Web browser to show, zoom and pan full HTML and XHTML web pages – multiple pages show as windows ("cards")<sup>[8][9]</sup>
- Camera support – however this version lacked the option to change the camera's resolution, white balance, quality, etc.<sup>[10]</sup>
- Folders allowing the grouping of a number of app icons into a single folder icon on the Home screen.<sup>[11]</sup>
- Access to web email servers, supporting POP3, IMAP4, and SMTP.<sup>[9]</sup>
- Gmail synchronization with the Gmail app
- Google Contacts synchronization with the People app
- Google Calendar synchronization with the Calendar app
- Google Maps with Latitude and Street View to view maps and satellite imagery, as well as find local business and obtain driving directions using GPS<sup>[10]</sup>
- Google Sync, allowing management of over-the-air synchronization of Gmail, People, and Calendar
- Google Search, allowing users to search the Internet and phone apps, contacts, calendar, etc
- Google Talk instant messaging
- Instant messaging, text messaging, and MMS
- Media Player, enabling management, importing, and playback of media files – however, this version lacked video and stereo Bluetooth support<sup>[9][10]</sup>
- Notifications appear in the Status bar, with options to set ringtone, LED or vibration alerts<sup>[8][9][12]</sup>
- Voice Dialer allows dialing and placing of phone calls without typing a name or number<sup>[9]</sup>
- Wallpaper allows the user to set the background image or photo behind the Home screen icons and widgets
- YouTube video player<sup>[13]</sup>
- Other apps include: Alarm Clock, Calculator, Dialer (Phone), Home screen (launcher), Pictures (Gallery), and Settings.
- Wi-Fi and Bluetooth support

## Android 1.1

On February 9, 2009, the Android 1.1 update was released, initially for the T-Mobile G1 only. The update resolved bugs, changed the API and added a number of other features:<sup>[14]</sup>

Version	Release date	Features
1.1	February 9, 2009	<ul style="list-style-type: none"><li>■ Details and reviews available when a user searches for businesses on Maps</li><li>■ Longer in-call screen timeout default when using the speakerphone, plus ability to show/hide dialpad</li><li>■ Ability to save attachments in messages</li><li>■ Support added for marquee in system layouts</li></ul>

## Cupcake 1.5

On April 30, 2009, the Android 1.5 update, dubbed Cupcake, was released, based on Linux kernel 2.6.27.<sup>[15][16]</sup> The update included several new features and UI amendments:<sup>[17]</sup>



The Android Emulator default home screen (v1.5).

Version	Release date	Features
1.5	April 30, 2009	<ul style="list-style-type: none"> <li>■ Support for third-party virtual keyboards with text prediction and user dictionary for custom words</li> <li>■ Support for Widgets - miniature application views that can be embedded in other applications (such as the Home screen) and receive periodic updates<sup>[18]</sup></li> <li>■ Video recording and playback in MPEG-4 and 3GP formats</li> <li>■ Auto-pairing and stereo support for Bluetooth added (A2DP and AVRCP profiles)</li> <li>■ Copy and paste features added to web browser</li> <li>■ User pictures shown for Favorites in Contacts</li> <li>■ Specific date/time stamp shown for events in call log, and one-touch access to a contact card from call log event</li> <li>■ Animated screen transitions</li> <li>■ Added auto-rotation option</li> <li>■ Added the current stock boot animation</li> <li>■ Ability to upload videos to YouTube</li> <li>■ Ability to upload photos to Picasa</li> </ul>

## Donut 1.6

On September 15, 2009, the Android 1.6 SDK – dubbed Donut – was released, based on Linux kernel 2.6.29.<sup>[19][20][21]</sup> Included in the update were numerous new features:<sup>[19]</sup>



The Android 1.6 home screen.

Version	Release date	Features
1.6	September 15, 2009	<ul style="list-style-type: none"><li>■ Voice and text entry search enhanced to include bookmark history, contacts, and the web</li><li>■ Ability for developers to include their content in search results</li><li>■ Multi-lingual speech synthesis engine to allow any Android application to "speak" a string of text</li><li>■ Easier searching and ability to view app screenshots in Android Market</li><li>■ Gallery, camera and camcorder more fully integrated, with faster camera access</li><li>■ Ability for users to select multiple photos for deletion</li><li>■ Updated technology support for CDMA/EVDO, 802.1x, VPNs, and a text-to-speech engine</li><li>■ Support for WVGA screen resolutions</li><li>■ Speed improvements in searching and camera applications</li><li>■ Expanded Gesture framework and new GestureBuilder development tool</li></ul>

## Éclair 2.0/2.1

On October 26, 2009, the Android 2.0 SDK – codenamed Éclair – was released, based on Linux kernel 2.6.29.<sup>[22]</sup> Changes included:<sup>[23]</sup>



The Motorola Droid, running Android 2.0.



Version	Release date	Features
2.0	October 26, 2009	<ul style="list-style-type: none"> <li>■ Expanded Account sync, allowing users to add multiple accounts to a device for email- and contact-synchronization</li> <li>■ Exchange email support, with combined inbox to browse email from multiple accounts in one page</li> <li>■ Bluetooth 2.1 support</li> <li>■ Ability to tap a Contacts photo and select to call, SMS, or email the person</li> <li>■ Ability to search all saved SMS and MMS messages, with delete oldest messages in a conversation automatically deleted when a defined limit is reached</li> <li>■ Numerous new camera features, including flash support, digital zoom, scene mode, white balance, color effect and macro focus</li> <li>■ Improved typing speed on virtual keyboard, with smarter dictionary that learns from word usage and includes contact names as suggestions</li> <li>■ Refreshed browser UI with bookmark thumbnails, double-tap zoom and support for HTML5</li> <li>■ Calendar agenda view enhanced, showing attending status for each invitee, and ability to invite new guests to events</li> <li>■ Optimized hardware speed and revamped UI</li> <li>■ Support for more screen sizes and resolutions, with better contrast ratio</li> <li>■ Improved Google Maps 3.1.2</li> <li>■ MotionEvent class enhanced to track multi-touch events<sup>[24]</sup></li> <li>■ Addition of live wallpapers, allowing the animation of home-screen background images to show movement</li> </ul>
2.0.1	December 3, 2009 <sup>[25]</sup>	<ul style="list-style-type: none"> <li>■ Minor API changes, bug fixes and framework behavioral changes</li> </ul>
2.1	January 12, 2010 <sup>[26]</sup>	<ul style="list-style-type: none"> <li>■ Minor amendments to the API and bug fixes</li> </ul>

## Froyo 2.2.x

On May 20, 2010, the Android 2.2 (Froyo) SDK was released, based on Linux kernel 2.6.32.<sup>[27]</sup>



Google's Nexus One was the first smartphone to receive Android 2.2 Froyo.

Version	Release date	Features
2.2	May 20, 2010	<ul style="list-style-type: none"> <li>■ Speed, memory, and performance optimizations<sup>[28]</sup></li> <li>■ Additional application speed improvements, implemented through JIT compilation<sup>[29]</sup></li> <li>■ Integration of Chrome's V8 JavaScript engine into the Browser application</li> <li>■ Support for the Android Cloud to Device Messaging (C2DM) service, enabling push notifications</li> <li>■ Improved Microsoft Exchange support, including security policies, auto-discovery, GAL look-up, calendar synchronization and remote wipe</li> <li>■ Improved application launcher with shortcuts to Phone and Browser applications</li> <li>■ USB tethering and Wi-Fi hotspot functionality</li> <li>■ Added an option to disable data access over mobile network</li> <li>■ Updated Market application with batch and automatic update features<sup>[28]</sup></li> <li>■ Quick switching between multiple keyboard languages and their dictionaries</li> <li>■ Voice dialing and contact sharing over Bluetooth</li> <li>■ Support for Bluetooth-enabled car and desk docks</li> <li>■ Support for numeric and alphanumeric passwords</li> <li>■ Support for file upload fields in the Browser application<sup>[30]</sup></li> <li>■ Support for installing applications to the expandable memory</li> <li>■ Adobe Flash support<sup>[31]</sup></li> <li>■ Support for extra-high-PPI screens (320 ppi), such as 4" 720p<sup>[32]</sup></li> <li>■ Gallery allows users to view picture stacks using a zoom gesture</li> </ul>
2.2.1	January 18, 2011	<ul style="list-style-type: none"> <li>■ Bug fixes, security updates and performance improvements</li> </ul>
2.2.2	January 22, 2011	<ul style="list-style-type: none"> <li>■ Minor bug fixes, including SMS routing issues that affected the Nexus One.<sup>[33]</sup></li> </ul>

2.2.3	November 21, 2011	■ Two security patches
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## Gingerbread 2.3.x

On December 6, 2010, the Android 2.3 (Gingerbread) SDK was released, based on Linux kernel 2.6.35.<sup>[34][35]</sup> Changes included:<sup>[34]</sup>



Google's Nexus S introduced Android 2.3 Gingerbread.

Version	Release date	Features
2.3	December 6, 2010	<ul style="list-style-type: none"> <li>■ Updated user interface design with increased simplicity and speed</li> <li>■ Support for extra-large screen sizes and resolutions (WXGA and higher)<sup>[32]</sup></li> <li>■ Native support for SIP VoIP internet telephony</li> <li>■ Faster, more intuitive text input in virtual keyboard, with improved accuracy, better suggested text and voice input mode</li> <li>■ Enhanced copy/paste functionality, allowing users to select a word by press-hold, copy, and paste</li> <li>■ Support for Near Field Communication (NFC), allowing the user to read an NFC tag embedded in a poster, sticker, or advertisement</li> <li>■ New audio effects such as reverb, equalization, headphone virtualization, and bass boost</li> <li>■ New Download Manager, giving users easy access to any file downloaded from the browser, email, or another application</li> <li>■ Support for multiple cameras on the device, including a front-facing camera, if available</li> <li>■ Support for WebM/VP8 video playback, and AAC audio encoding</li> <li>■ Improved power management with a more active role in managing apps that are keeping the device awake for too long</li> <li>■ Enhanced support for native code development</li> <li>■ Switched from YAFFS to ext4 on newer devices<sup>[36][37]</sup></li> <li>■ Audio, graphical, and input enhancements for game developers</li> <li>■ Concurrent garbage collection for increased performance</li> <li>■ Native support for more sensors (such as gyroscopes and barometers)</li> </ul>
2.3.3	February 9, 2011	<ul style="list-style-type: none"> <li>■ Several improvements and API fixes.<sup>[38]</sup></li> </ul>
2.3.4	April 28, 2011	<ul style="list-style-type: none"> <li>■ Support for voice or video chat using Google Talk.<sup>[39]</sup></li> </ul>

2.3.5	July 25, 2011	<ul style="list-style-type: none"> <li>■ System enhancements.<sup>[40]</sup></li> <li>■ Improved network performance for the Nexus S 4G, among other fixes and improvements</li> <li>■ Fixed Bluetooth bug on Samsung Galaxy S</li> <li>■ Improved Gmail application</li> <li>■ Shadow animations for list scrolling</li> <li>■ Camera software enhancements</li> <li>■ Improved battery efficiency</li> </ul>
2.3.6	September 2, 2011	<ul style="list-style-type: none"> <li>■ Fixed a voice search bug (The 2.3.6 update had the side-effect of impairing the Wi-Fi hotspot functionality of many Canadian Nexus S phones. Google acknowledged this problem and fixed it in late September)<sup>[41][42]</sup></li> </ul>
2.3.7	September 21, 2011	<ul style="list-style-type: none"> <li>■ Google Wallet support for the Nexus S 4G.</li> </ul>

## Honeycomb 3.x

On February 22, 2011, the Android 3.0 (Honeycomb) SDK – the first tablet-only Android update – was released, based on Linux kernel 2.6.36.<sup>[43][44][45][46]</sup> The first device featuring this version, the Motorola Xoom tablet, was released on February 24, 2011.<sup>[47]</sup> Changes included:<sup>[43]</sup>

Version	Release date	Features
3.0	February 22, 2011	<ul style="list-style-type: none"><li>■ Optimized tablet support with a new virtual and “holographic” user interface</li><li>■ Added System Bar, featuring quick access to notifications, status, and soft navigation buttons, available at the bottom of the screen</li><li>■ Added Action Bar, giving access to contextual options, navigation, widgets, or other types of content at the top of the screen</li><li>■ Simplified multitasking – tapping Recent Apps in the System Bar allows users to see snapshots of the tasks underway and quickly jump from one app to another</li><li>■ Redesigned keyboard, making typing fast, efficient and accurate on larger screen sizes</li><li>■ Simplified, more intuitive copy/paste interface</li><li>■ Multiple browser tabs replacing browser windows, plus form auto-fill and a new “incognito” mode allowing anonymous browsing</li><li>■ Quick access to camera exposure, focus, flash, zoom, front-facing camera, time-lapse, and more</li><li>■ Ability to view albums and other collections in full-screen mode in Gallery, with easy access to thumbnails for other photos</li><li>■ New two-pane Contacts UI and Fast Scroll to let users easily organize and locate contacts</li><li>■ New two-pane Email UI to make viewing and organizing messages more efficient, allowing users to select one or more messages</li><li>■ Support for video chat using Google Talk</li><li>■ Hardware acceleration</li><li>■ Support for multi-core processors</li><li>■ Ability to encrypt all user data</li></ul>

3.1	May 10, 2011 <sup>[48]</sup>	<ul style="list-style-type: none"> <li>■ UI refinements</li> <li>■ Connectivity for USB accessories</li> <li>■ Expanded Recent Apps list</li> <li>■ Resizable Home screen widgets</li> <li>■ Support for external keyboards and pointing devices</li> <li>■ Support for joysticks and gamepads</li> <li>■ Support for FLAC audio playback<sup>[49][50]</sup></li> <li>■ High-performance Wi-Fi lock, maintaining high-performance Wi-Fi connections when device screen is off</li> <li>■ Support for HTTP proxy for each connected Wi-Fi access point</li> </ul>
3.2	July 15, 2011 <sup>[51]</sup>	<ul style="list-style-type: none"> <li>■ Improved hardware support, including optimizations for a wider range of tablets</li> <li>■ Increased ability of apps to access files on the SD card, e.g. for synchronization</li> <li>■ Compatibility display mode for apps that have not been optimized for tablet screen resolutions</li> <li>■ New display support functions, giving developers more control over display appearance on different Android devices<sup>[52]</sup></li> </ul>
3.2.1	September 20, 2011	<ul style="list-style-type: none"> <li>■ Bug fixes and minor security, stability and Wi-Fi improvements</li> <li>■ Update to Android Market with automatic updates and easier-to-read Terms and Condition text</li> <li>■ Update to Google Books</li> <li>■ Improved Adobe Flash support in browser</li> <li>■ Improved Chinese handwriting prediction</li> </ul>
3.2.2	August 30, 2011	<ul style="list-style-type: none"> <li>■ Bug fixes and other minor improvements for the Motorola Xoom 4G</li> </ul>
3.2.4	December 2011	<ul style="list-style-type: none"> <li>■ "Pay as You Go" support for 3G and 4G tablets</li> </ul>



3.2.6	February 2012	<ul style="list-style-type: none"><li>■ Fixed data connectivity issues when coming out of airplane mode on the US 4G Motorola Xoom</li></ul>
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## Ice Cream Sandwich 4.0.x

The SDK for Android 4.0.1 (Ice Cream Sandwich), based on Linux kernel 3.0.1,<sup>[53]</sup> was publicly released on October 19, 2011.<sup>[54]</sup> Google's Gabe Cohen stated that Android 4.0 was "theoretically compatible" with any Android 2.3.x device in production at that time.<sup>[55]</sup> The source code for Android 4.0 became available on November 14, 2011.<sup>[56]</sup> The update introduced numerous new features, including:<sup>[57][58][59]</sup>



The Samsung Galaxy Nexus, the first of the Samsung Galaxy series to run Android 4.0.

Version	Release date	Features
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4.0.1

October 19, 2011

- Virtual buttons in the UI, in place of capacitive or physical buttons
- Separation of widgets in a new tab, listed in a similar manner to apps
- Easier-to-create folders, with a drag-and-drop style
- A customizable launcher
- Improved visual voicemail with the ability to speed up or slow down voicemail messages
- Pinch-to-zoom functionality in the calendar
- Integrated screenshot capture (accomplished by holding down the Power and Volume-Down buttons)
- Improved error correction on the keyboard
- Ability to access apps directly from lock screen
- Improved copy and paste functionality
- Better voice integration and continuous, real-time speech to text dictation
- Face Unlock, a feature that allows users to unlock handsets using facial recognition software
- New tabbed web browser, allowing up to 16 tabs
- Automatic syncing of browser with users' Chrome bookmarks
- A new typeface family for the UI, Roboto
- Data Usage section in settings that lets users set warnings when they approach a certain usage limit, and disable data use when the limit is exceeded
- Ability to shut down apps that are using data in the background
- Improved camera app with zero shutter lag, time lapse settings, panorama mode, and the ability to zoom while recording
- Built-in photo editor
- New gallery layout, organized by location and person
- Refreshed "People" app with social network integration, status updates and hi-res images
- Android Beam, a near-field communication feature allowing the rapid short-range exchange of web bookmarks, contact info, directions, YouTube videos and other data
- Support for the WebP image format<sup>[49]</sup>
- Hardware acceleration of the UI<sup>[60]</sup>
- Wi-Fi Direct<sup>[61]</sup>

4.0.2	November 28, 2011	<ul style="list-style-type: none"> <li>■ Fixed minor bugs on the Verizon Galaxy Nexus, the US launch of which was later delayed until December 2011</li> <li>■ For Canadian consumers, 4.0.2 reportedly created a bug on the Galaxy Nexus that crashed the application market when users attempted to view details of any Android application. It also inadvertently reduced the NFC capabilities of the Nexus phone<sup>[62][63]</sup></li> </ul>
4.0.3	December 16, 2011 <sup>[64]</sup>	<ul style="list-style-type: none"> <li>■ Number of bug fixes and optimizations</li> <li>■ Improvements to graphics, databases, spell-checking and Bluetooth functionality</li> <li>■ New APIs for developers, including a social stream API in the Contacts provider</li> <li>■ Calendar provider enhancements</li> <li>■ New camera apps enhancing video stabilization and QVGA resolution</li> <li>■ Accessibility refinements such as improved content access for screen readers<sup>[65]</sup></li> </ul>
4.0.4	March 29, 2012	<ul style="list-style-type: none"> <li>■ Stability improvements</li> <li>■ Better camera performance</li> <li>■ Smoother screen rotation</li> <li>■ Improved phone number recognition<sup>[66]</sup></li> </ul>

## Expected future updates

### Jelly Bean

The next major Android version is expected to be released in the third quarter of 2012. It may carry the version number 5.x and the codename "Jelly Bean",<sup>[67]</sup> though Google has not yet officially confirmed this.<sup>[68]</sup>

Version	Release date	Speculated features
TBA	TBA	<ul style="list-style-type: none"> <li>■ Further tablet optimizations</li> <li>■ Capability to run on laptops and dual-boot with Microsoft Windows</li> <li>■ Assistant, an intelligent personal assistant comparable to Apple's Siri and codenamed "Majel"<sup>[69]</sup></li> <li>■ Inclusion of Google Chrome, currently in beta testing</li> <li>■ Improved default keyboard</li> <li>■ Further Google services integration</li> <li>■ Inclusion of a file manager</li> <li>■ Malware protection</li> </ul>

## Key Lime Pie

After Android Jelly Bean, the rumored codename for the next version is Key Lime Pie. The rumored release date for this version sometime in 2013.<sup>[70]</sup>

## See also

- Blackberry OS version history
- iOS version history
- Windows Phone version history

## References

- ↑ "Google Keynote at AnDevCon II" ([https://www.youtube.com/watch?v=gIIni\\_4fC60](https://www.youtube.com/watch?v=gIIni_4fC60)) . *Development Team*. November 9, 2011. [https://www.youtube.com/watch?v=gIIni\\_4fC60](https://www.youtube.com/watch?v=gIIni_4fC60).
- ↑ "Google announces Android 4.0.4" (<http://www.theinquirer.net/inquirer/news/2164732/google-announces-android-404-gsm-nexus-galaxy-nexus-phones>) . *The Inquirer*, March 29, 2012. Retrieved March 31, 2012.
- ↑ "Google Launches Android, an Open Mobile Platform" (<http://googlesystem.blogspot.com/2007/11/google-launches-android-open-mobile.html>) . *Google Operating System*. November 5, 2007. <http://googlesystem.blogspot.com/2007/11/google-launches-android-open-mobile.html>.
- ↑ *Live Google's gPhone Open handset alliance conference call* (<http://gizmodo.com/#!318561/live-googles-gphone-open-handset-alliance-conference-call>) (transcript), Gizmodo, November 5, 2007, <http://gizmodo.com/#!318561/live-googles-gphone-open-handset-alliance-conference-call>.
- ↑ "Google releases Android SDK" (<http://www.macworld.com/article/61005/2007/11/androidsdk.html>) . Macworld. November 12, 2007. <http://www.macworld.com/article/61005/2007/11/androidsdk.html>.
- ↑ Morrill, Dan (September 23, 2008). "Announcing the Android 1.0 SDK, release 1" (<http://android-developers.blogspot.com/2008/09/announcing-android-10-sdk-release-1.html>) . *Android Developers Blog*. <http://android-developers.blogspot.com/2008/09/announcing-android-10-sdk-release-1.html>. Retrieved January 12, 2011.
- ↑ "T-Mobile Unveils the T-Mobile G1 – the First Phone Powered by Android" (<http://www.htc.com/www/press.aspx?id=66338&lang=1033>) . HTC. <http://www.htc.com/www/press.aspx?id=66338&lang=1033>. Retrieved May 19, 2009.
- ↑ <sup>*a*</sup> <sup>*b*</sup> Topolsky, Joshua (October 16, 2008). "T-Mobile G1 review, part 2: software and wrap-up" (<http://www.engadget.com/2008/10/16/t-mobile-g1-review-part-2-software-and-wrap-up/>) . Engadget. <http://www.engadget.com/2008/10/16/t-mobile-g1-review-part-2-software-and-wrap-up/>.

9. <sup>^ a b c d e</sup> "Release features – Android 1.0" (<https://sites.google.com/a/android.com/opensource/release-features---android-1-0>) . Google. <https://sites.google.com/a/android.com/opensource/release-features---android-1-0>.
10. <sup>^ a b c</sup> Segan, Sascha. "T-Mobile G1 (Google Android Phone)" (<http://www.pcmag.com/article2/0,2817,2331003,00.asp>) . PC Magazine. <http://www.pcmag.com/article2/0,2817,2331003,00.asp>.
11. <sup>^</sup> LaCouvee, Darcy (October 17, 2008). "Folders on the Android desktop, and how to rename them" (<http://www.androidauthority.com/folders-on-the-android-desktop-and-how-to-rename-them-466/>) . Android Authority. <http://www.androidauthority.com/folders-on-the-android-desktop-and-how-to-rename-them-466/>.
12. <sup>^</sup> "Status Bar Notifications" (<http://developer.android.com/guide/topics/ui/notifiers/notifications.html>) . Android Developers. <http://developer.android.com/guide/topics/ui/notifiers/notifications.html>.
13. <sup>^</sup> "Android for Dummies" (<http://www.techpluto.com/what-is-android/>) . TechPluto. September 18, 2008. <http://www.techpluto.com/what-is-android/>.
14. <sup>^</sup> "Android 1.1 Version Notes" (<http://developer.android.com/sdk/android-1.1.html>) . *Android Developers*. February 2009. <http://developer.android.com/sdk/android-1.1.html>. Retrieved January 12, 2011.
15. <sup>^</sup> Ducrohet, Xavier (April 27, 2009). "Android 1.5 is here!" (<http://android-developers.blogspot.com/2009/04/android-15-is-here.html>) . *Android Developers Blog*. <http://android-developers.blogspot.com/2009/04/android-15-is-here.html>. Retrieved September 3, 2009.
16. <sup>^</sup> Rob, Jackson (April 30, 2009). "CONFIRMED: Official Cupcake Update Underway for T-Mobile G1 USA & UK!" (<http://phandroid.com/2009/04/30/official-cupcake-update-underway-for-t-mobile-g1-usa/>) . *Android Phone Fans*. <http://phandroid.com/2009/04/30/official-cupcake-update-underway-for-t-mobile-g1-usa/>. Retrieved September 3, 2009.
17. <sup>^</sup> "Android 1.5 Platform Highlights" (<http://developer.android.com/sdk/android-1.5-highlights.html>) . *Android Developers*. April 2009. <http://developer.android.com/sdk/android-1.5-highlights.html>. Retrieved September 3, 2009.
18. <sup>^</sup> "App Widgets" (<http://developer.android.com/guide/topics/appwidgets/index.html>) . Android Developers. <http://developer.android.com/guide/topics/appwidgets/index.html>.
19. <sup>^ a b</sup> "Android 1.6 Platform Highlights" (<http://developer.android.com/sdk/android-1.6-highlights.html>) . *Android Developers*. September 2009. <http://developer.android.com/sdk/android-1.6-highlights.html>. Retrieved October 1, 2009.
20. <sup>^</sup> Ducrohet, Xavier (September 15, 2009). "Android 1.6 SDK is here" (<http://android-developers.blogspot.com/2009/09/android-16-sdk-is-here.html>) . *Android Developers Blog*. <http://android-developers.blogspot.com/2009/09/android-16-sdk-is-here.html>. Retrieved October 1, 2009.
21. <sup>^</sup> Ryan, Paul (October 1, 2009). "Google releases Android 1.6; Palm unleashes WebOS 1.2" (<http://arstechnica.com/gadgets/news/2009/10/google-releases-android-16-palm-releases-webos-12.ars>) . *Ars Technica*. <http://arstechnica.com/gadgets/news/2009/10/google-releases-android-16-palm-releases-webos-12.ars>. Retrieved October 1, 2009.
22. <sup>^</sup> "Android 2.0, Release 1" (<http://developer.android.com/sdk/android-2.0.html>) . *Android Developers*. <http://developer.android.com/sdk/android-2.0.html>. Retrieved October 27, 2009.
23. <sup>^</sup> "Android 2.0 Platform Highlights" (<http://developer.android.com/sdk/android-2.0-highlights.html>) . *Android Developers*. <http://developer.android.com/sdk/android-2.0-highlights.html>. Retrieved October 27, 2009.
24. <sup>^</sup> "Android 2.0 API Changes Summary" (<http://developer.android.com/sdk/android-2.0.html#api-changes>) . <http://developer.android.com/sdk/android-2.0.html#api-changes>. Retrieved March 6, 2010.
25. <sup>^</sup> "Android 2.0.1, Release 1 SDK" (<http://developer.android.com/sdk/android-2.0.1.html>) . *Android Developers*. <http://developer.android.com/sdk/android-2.0.1.html>. Retrieved January 17, 2010.
26. <sup>^</sup> "Android 2.1, Release 1" (<http://developer.android.com/sdk/android-2.1.html>) . *Android Developers*. <http://developer.android.com/sdk/android-2.1.html>. Retrieved January 17, 2010.
27. <sup>^</sup> Ducrohet, Xavier (May 20, 2010). "Android 2.2 and developers goodies" (<http://android-developers.blogspot.com/2010/05/android-22-and-developers-goodies.html>) . *Android Developers Blog*. Google. <http://android-developers.blogspot.com/2010/05/android-22-and-developers-goodies.html>. Retrieved May 20, 2010.
28. <sup>^ a b</sup> "Unofficially Confirmed Froyo Features, Post-Day-1 Of Google I/O" (<http://www.androidpolice.com/2010/05/20/exclusive-unofficially-confirmed-froyo-features-post-day-1-of-google-io-google-io-blitz-coverage-day-1/>) . *Android Police*.

- <http://www.androidpolice.com/2010/05/20/exclusive-unofficially-confirmed-froyo-features-post-day-1-of-google-io-google-io-blitz-coverage-day-1/>. Retrieved May 20, 2010.
29. ^ "Nexus One Is Running Android 2.2 Froyo. How Fast Is It Compared To 2.1? Oh, Only About 450% Faster" (<http://www.androidpolice.com/2010/05/11/exclusive-androidpolice-coms-nexus-one-is-running-android-2-2-froyo-how-fast-is-it-compared-to-2-1-oh-only-about-450-faster/>) . *androidpolice*. <http://www.androidpolice.com/2010/05/11/exclusive-androidpolice-coms-nexus-one-is-running-android-2-2-froyo-how-fast-is-it-compared-to-2-1-oh-only-about-450-faster/>. Retrieved May 13, 2010.
  30. ^ "Browser support for file upload field is coming in Froyo" (<http://code.google.com/p/android/issues/detail?id=2519#c112>) . *Google Code*. <http://code.google.com/p/android/issues/detail?id=2519#c112>. Retrieved May 13, 2010.
  31. ^ Stone, Brad (April 27, 2010). "Google's Andy Rubin on Everything Android" (<http://bits.blogs.nytimes.com/2010/04/27/googles-andy-rubin-on-everything-android/>) . *NY Times*. <http://bits.blogs.nytimes.com/2010/04/27/googles-andy-rubin-on-everything-android/>. Retrieved May 20, 2010.
  32. ^ <sup>a</sup> <sup>b</sup> "Supporting Multiple Screens: Range of screens supported" ([http://developer.android.com/guide/practices/screens\\_support.html#range](http://developer.android.com/guide/practices/screens_support.html#range)) . Android Developers. [http://developer.android.com/guide/practices/screens\\_support.html#range](http://developer.android.com/guide/practices/screens_support.html#range).
  33. ^ Hollister, Sean (January 22, 2011). "Nexus One gets tiny update to Android 2.2.2, fixes SMS routing issues" (<http://www.engadget.com/2011/01/22/nexus-one-gets-tiny-update-to-android-2-2-2-probably-fixes-sms/>) . *engadget.com*. <http://www.engadget.com/2011/01/22/nexus-one-gets-tiny-update-to-android-2-2-2-probably-fixes-sms/>. Retrieved November 17, 2011.
  34. ^ <sup>a</sup> <sup>b</sup> "Android 2.3 Platform Highlights" (<http://developer.android.com/sdk/android-2.3-highlights.html>) . *Android Developers*. December 6, 2010. <http://developer.android.com/sdk/android-2.3-highlights.html>. Retrieved December 7, 2010.
  35. ^ Ducrohet, Xavier (December 6, 2010). "Android 2.3 Platform and Updated SDK Tools" (<http://android-developers.blogspot.com/2010/12/android-23-platform-and-updated-sdk.html>) . *Android Developers Blog*. Google. <http://android-developers.blogspot.com/2010/12/android-23-platform-and-updated-sdk.html>. Retrieved December 7, 2010.
  36. ^ Ts'o, Theodore (December 12, 2010). "Android will be using ext4 starting with Gingerbread" (<http://www.linuxfoundation.org/news-media/blogs/browse/2010/12/android-will-be-using-ext4-starting-gingerbread>) . *Theodore Tso's blog*. <http://www.linuxfoundation.org/news-media/blogs/browse/2010/12/android-will-be-using-ext4-starting-gingerbread>. Retrieved June 11, 2011.
  37. ^ Tim Bray (December 19, 2010). "Saving Data Safely" (<http://android-developers.blogspot.com/2010/12/saving-data-safely.html>) . *Android Developers Blog*. <http://android-developers.blogspot.com/2010/12/saving-data-safely.html>. Retrieved June 11, 2011.
  38. ^ "Android 2.3.3 Platform" (<http://developer.android.com/sdk/android-2.3.3.html>) . Android Developers. <http://developer.android.com/sdk/android-2.3.3.html>.
  39. ^ "Video Chat on Your Android Phone" (<http://googlemobile.blogspot.com/2011/04/video-chat-on-your-android-phone.html>) . *Google Mobile Blog*. April 28, 2011. <http://googlemobile.blogspot.com/2011/04/video-chat-on-your-android-phone.html>.
  40. ^ Arghire, Ionut. "Android 2.3.5 Arrives on Galaxy S in the UK" (<http://news.softpedia.com/news/Android-2-3-5-Arrives-on-Galaxy-S-in-the-UK-235644.shtml>) . *Softpedia.com*. <http://news.softpedia.com/news/Android-2-3-5-Arrives-on-Galaxy-S-in-the-UK-235644.shtml>. Retrieved December 1, 2011.
  41. ^ Ali Waqas (Sep 28, 2011). "Android 2.3.6 Gingerbread Update For Nexus S Available [Wi-Fi And Tethering Fix (<http://www.addictivetips.com/mobile/android-2-3-6-gingerbread-update-for-nexus-s-available-wi-fi-and-tethering-fix/>) "] . *Addictive Tips*. <http://www.addictivetips.com/mobile/android-2-3-6-gingerbread-update-for-nexus-s-available-wi-fi-and-tethering-fix/>. Retrieved December 20, 2011.
  42. ^ Anton D. Nagy (27-Sep-11). "Google Samsung Nexus S Gets Android 2.3.6 Update" (<http://pocketnow.com/android/google-samsung-nexus-s-gets-android-236-update>) . *PocketNow*. <http://pocketnow.com/android/google-samsung-nexus-s-gets-android-236-update>. Retrieved December 20, 2011.
  43. ^ <sup>a</sup> <sup>b</sup> "Android 3.0 Platform Highlights" (<http://developer.android.com/sdk/android-3.0-highlights.html>) . *Android Developers*. <http://developer.android.com/sdk/android-3.0-highlights.html>. Retrieved Feb 23, 2011.
  44. ^ Rubin, Andy (January 5, 2011). "A Sneak Peek of Android 3.0, Honeycomb" (<http://googlemobile.blogspot.com/2011/01/sneak-peak-of-android-30-honeycomb.html>) .

- Google Mobile Blog*. Google. <http://googlemobile.blogspot.com/2011/01/sneak-peak-of-android-30-honeycomb.html>. Retrieved January 5, 2011.
45. ^ Xavier Ducrohet (February 22, 2011). "Final Android 3.0 Platform and Updated SDK Tools" (<http://android-developers.blogspot.com/2011/02/final-android-30-platform-and-updated.html>) . *Android Developers blog*. <http://android-developers.blogspot.com/2011/02/final-android-30-platform-and-updated.html>. Retrieved February 23, 2011.
  46. ^ Mithun Chandrasekhar (February 2, 2011). "Google's Android Event Analysis" (<http://www.anandtech.com/show/4150/googles-android-event-analysis/2>) . *AnandTech*. <http://www.anandtech.com/show/4150/googles-android-event-analysis/2>. Retrieved February 5, 2011. "I confirmed this with Google; Honeycomb, at least in the current form, will not be coming to non-tablet devices."
  47. ^ Nilay Patel (January 26, 2011). "Motorola Atrix 4G and Xoom tablet launching at the end of February, Droid Bionic and LTE Xoom in Q2" (<http://www.engadget.com/2011/01/26/motorola-atrrix-4g-and-xoom-tablet-launching-at-the-end-of-februa/>) . *Engadget*. <http://www.engadget.com/2011/01/26/motorola-atrrix-4g-and-xoom-tablet-launching-at-the-end-of-februa/>. Retrieved February 5, 2011.
  48. ^ Ducrohet, Xavier (May 10, 2011). "Android 3.1 Platform, New SDK tools" (<http://android-developers.blogspot.com/2011/05/android-31-platform-new-sdk-tools.html>) . *Android Developers Blog*. <http://android-developers.blogspot.com/2011/05/android-31-platform-new-sdk-tools.html>. Retrieved May 10, 2011.
  49. ^ <sup>a</sup> <sup>b</sup> "Android Supported Media Formats" (<http://developer.android.com/guide/appendix/media-formats.html>) . *Android Developers*. <http://developer.android.com/guide/appendix/media-formats.html>. Retrieved March 30, 2012.
  50. ^ "Issue 1461 - android - FLAC file support enhancement request." (<http://code.google.com/p/android/issues/detail?id=1461>) . *code.google.com*. <http://code.google.com/p/android/issues/detail?id=1461>. Retrieved August 5, 2011.
  51. ^ Ducrohet, Xavier (July 15, 2011). "Android 3.2 Platform and Updated SDK tools" (<http://android-developers.blogspot.com/2011/07/android-32-platform-and-updated-sdk.html>) . *Android Developers Blog*. <http://android-developers.blogspot.com/2011/07/android-32-platform-and-updated-sdk.html>. Retrieved July 16, 2011.
  52. ^ "Declaring Tablet Layouts for Android 3.2" ([http://developer.android.com/guide/practices/screens\\_support.html#DeclaringTabletLayouts](http://developer.android.com/guide/practices/screens_support.html#DeclaringTabletLayouts)) . *Supporting Multiple Screens*. Android Developers. 2012. [http://developer.android.com/guide/practices/screens\\_support.html#DeclaringTabletLayouts](http://developer.android.com/guide/practices/screens_support.html#DeclaringTabletLayouts). Retrieved April 26, 2012.
  53. ^ Maroger. "Ice Cream Sandwich Runs on Linux Kernel 3.0.1" (<http://fineoils.blogspot.com/2011/10/ice-cream-sandwich-runs-on-linux-kernel.html#!/2011/10/ice-cream-sandwich-runs-on-linux-kernel.html>) . Blogspot - Fine Oils. <http://fineoils.blogspot.com/2011/10/ice-cream-sandwich-runs-on-linux-kernel.html#!/2011/10/ice-cream-sandwich-runs-on-linux-kernel.html>. Retrieved October 19, 2011.
  54. ^ Rey, Francis (October 19, 2011). "Android 4.0 Ice Cream Sandwich SDK Now Available" (<http://socialbarrel.com/android-4-0-ice-cream-sandwich-sdk-now-available/24093/>) . Social Barrel. <http://socialbarrel.com/android-4-0-ice-cream-sandwich-sdk-now-available/24093/>.
  55. ^ Stevens, Tim (October 19, 2011). "Google confirms Nexus S will get Ice Cream Sandwich -- for real this time (Gingerbread devices, too)" (<http://www.engadget.com/2011/10/19/google-confirms-nexus-s-will-get-ice-cream-sandwich-for-real/>) . Engadget. <http://www.engadget.com/2011/10/19/google-confirms-nexus-s-will-get-ice-cream-sandwich-for-real/>.
  56. ^ Messina, Vincent (November 15, 2011). "Ice Cream Sandwich source code released, custom ROMs inevitable" (<http://www.androidguys.com/2011/11/15/ice-cream-sandwich-source-code-released-custom-roms-inevitable/>) . AndroidGuys. <http://www.androidguys.com/2011/11/15/ice-cream-sandwich-source-code-released-custom-roms-inevitable/>.
  57. ^ Molen, Brad (October 19, 2011). "Android 4.0 Ice Cream Sandwich now official, includes revamped design, enhancements galore" (<http://www.engadget.com/2011/10/18/android-4-0-ice-cream-sandwich-now-official/>) . Engadget. <http://www.engadget.com/2011/10/18/android-4-0-ice-cream-sandwich-now-official/>. Retrieved October 19, 2011.
  58. ^ German, Kent (October 18, 2011). "Ice Cream Sandwich adds tons of new features" ([http://reviews.cnet.com/8301-19736\\_7-20122331-251/ice-cream-sandwich-adds-tons-of-new-features/?tag=mncol;txt](http://reviews.cnet.com/8301-19736_7-20122331-251/ice-cream-sandwich-adds-tons-of-new-features/?tag=mncol;txt)) . CNET. [http://reviews.cnet.com/8301-19736\\_7-20122331-251/ice-cream-sandwich-adds-tons-of-new-features/?tag=mncol;txt](http://reviews.cnet.com/8301-19736_7-20122331-251/ice-cream-sandwich-adds-tons-of-new-features/?tag=mncol;txt).



59. ^ Velazco, Chris (October 18, 2011). "A Quick Android 4.0 Ice Cream Sandwich Feature Rundown" (<http://techcrunch.com/2011/10/18/a-quick-ice-cream-sandwich-feature-rundown/>) . Tech Crunch. <http://techcrunch.com/2011/10/18/a-quick-ice-cream-sandwich-feature-rundown/>.
60. ^ Kennemer, Quentyn (October 19, 2011). "Android 4.0 Ice Cream Sandwich has Hardware Acceleration" (<http://phandroid.com/2011/10/19/android-4-0-ice-cream-sandwich-has-hardware-acceleration/>) . Phandroid. <http://phandroid.com/2011/10/19/android-4-0-ice-cream-sandwich-has-hardware-acceleration/>. Retrieved October 19, 2011.
61. ^ Lia, Sindre (October 21, 2011). "Android 4 Breaks New Ground (Part 6)" ([http://www.infosyncworld.com/reviews/cell-phones/android-4-breaks-new-ground-\(part-6\)/12199.html](http://www.infosyncworld.com/reviews/cell-phones/android-4-breaks-new-ground-(part-6)/12199.html)) . infoSync. [http://www.infosyncworld.com/reviews/cell-phones/android-4-breaks-new-ground-\(part-6\)/12199.html](http://www.infosyncworld.com/reviews/cell-phones/android-4-breaks-new-ground-(part-6)/12199.html).
62. ^ "Verizon's 4G LTE Galaxy Nexus Gets Pictured, Receives Android 4.0.2 Update" (<http://www.droid-life.com/2011/11/28/verizons-4g-lte-galaxy-nexus-still-in-testing-receives-android-4-0-2-update/>) . DroidLife. November 28, 2011. <http://www.droid-life.com/2011/11/28/verizons-4g-lte-galaxy-nexus-still-in-testing-receives-android-4-0-2-update/>. Retrieved December 8, 2011.
63. ^ "Within 2 Hours of Activation, Your Galaxy Nexus Will Receive an Update" (<http://www.droid-life.com/2011/12/15/within-2-hours-of-activation-your-galaxy-nexus-will-receive-an-update-here-are-the-details/>) . DroidLife. December 15, 2011. <http://www.droid-life.com/2011/12/15/within-2-hours-of-activation-your-galaxy-nexus-will-receive-an-update-here-are-the-details/>. Retrieved December 15, 2011.
64. ^ "Android 4.0.3 Platform and Updated SDK tools" (<http://android-developers.blogspot.com/2011/12/android-403-platform-and-updated-sdk.html>) . Android Developers Blog, December 16, 2011. Retrieved January 4, 2012.
65. ^ "Android 4.0.3 announced, bringing 'variety of optimizations and bug fixes' to phones and tablets" (<http://www.engadget.com/2011/12/16/android-4-0-3-announced-brings-variety-of-optimizations-and-bu/>) . Engadget. December 16, 2011. <http://www.engadget.com/2011/12/16/android-4-0-3-announced-brings-variety-of-optimizations-and-bu/>. Retrieved December 17, 2011.
66. ^ Google announces 4.0.4 on Google+ (<https://plus.google.com/u/0/104629412415657030658/posts/NgGwavbmkQ7>) . March 28, 2012. Retrieved March 31, 2012.
67. ^ "Android Jelly Bean could come first from Asus" (<http://www.techradar.com/news/phone-and-communications/mobile-phones/android-jelly-bean-could-come-first-from-asus-1068276>) . <http://www.techradar.com/news/phone-and-communications/mobile-phones/android-jelly-bean-could-come-first-from-asus-1068276>. Retrieved March 2, 2012.
68. ^ Robinson, Blake (March 22, 2012). "Android 5.0, aka Jelly Bean, rumored for Q3 release" ([http://news.cnet.com/8301-1035\\_3-57402420-94/android-5.0-aka-jelly-bean-rumored-for-q3-release](http://news.cnet.com/8301-1035_3-57402420-94/android-5.0-aka-jelly-bean-rumored-for-q3-release)) . [http://news.cnet.com/8301-1035\\_3-57402420-94/android-5.0-aka-jelly-bean-rumored-for-q3-release](http://news.cnet.com/8301-1035_3-57402420-94/android-5.0-aka-jelly-bean-rumored-for-q3-release). Retrieved April 2, 2012.
69. ^ "Google's Siri-a-like to be named 'Majel' after Trek actress" ([http://www.theregister.co.uk/2011/12/16/google\\_siri\\_will\\_be\\_called\\_majel/](http://www.theregister.co.uk/2011/12/16/google_siri_will_be_called_majel/)) . *The Register*, 16 December 2011. Retrieved 10 May 2012.
70. ^ Android Jelly Bean and Key Lime Pie: What to expect (<http://www.digitaltrends.com/android/android-jelly-bean-and-key-lime-pie-what-to-expect/>) . March 5, 2012. Retrieved May 5, 2012.

## External links

- Android API Levels (<http://developer.android.com/guide/appendix/api-levels.html>)

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