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**iPad** ([Template:IPAc-en](/wiki/Template:IPAc-en) [Template:Respell](/wiki/Template:Respell)) is an [iOS](/wiki/IOS)-based line of [tablet computers](/wiki/Tablet_computer) designed and marketed by [Apple Inc.](/wiki/Apple_Inc.) The first iPad was released on April 3, 2010; the most recent iPad models are the 9.7-inch [iPad Pro](/wiki/IPad_Pro) released on March 31, 2016 and the [iPad Mini 4](/wiki/IPad_Mini_4), released on September 9, 2015. The [user interface](/wiki/User_interface) is built around the device's [multi-touch](/wiki/Multi-touch) screen, including a [virtual keyboard](/wiki/Virtual_keyboard). The iPad includes built-in [Wi-Fi](/wiki/Wi-Fi) and [cellular](/wiki/Cellular_network) connectivity on select models. As of January 2015, there have been over 250 million iPads sold.[[1]](#cite_note-1)iPad tablets are second most popular, by sales, against [Android](/wiki/Android_(operating_system))-based ones, since 2013, when Android tablet sales increased by 127%.[[2]](#cite_note-2) An iPad can [shoot video](/wiki/Video_camera), [take photos](/wiki/Camera_phone), [play music](/wiki/Portable_media_player), and perform Internet functions such as web-browsing and emailing. Other functions[Template:Snd](/wiki/Template:Snd) [games](/wiki/Video_game), [reference](/wiki/Reference_work), [GPS navigation](/wiki/GPS_navigation_software), [social networking](/wiki/Social_networking_service), etc.[Template:Snd](/wiki/Template:Snd) can be enabled by downloading and installing [apps](/wiki/Application_software). As of October 2013, the [App Store](/wiki/App_Store_(iOS)) has more than 475,000 native apps by Apple and third parties.[[3]](#cite_note-3) There have been six [versions](/wiki/List_of_iOS_devices#iPad) of the iPad. The [first generation](/wiki/IPad_(first_generation)) established design precedents, such as the 9.7-inch screen size and button placement, that have persisted through all models. The [2nd generation iPad](/wiki/IPad_(2nd_generation)) (iPad 2) introduced a whole new design which also added a [dual-core](/wiki/Multi-core_processor) [Apple A5](/wiki/Apple_A5) processor and VGA front-facing and [720p](/wiki/720p) rear-facing cameras designed for [FaceTime](/wiki/FaceTime) video calling, and dramatically reduced the thickness of the device. The [third generation](/wiki/IPad_(third_generation)) added a [Retina Display](/wiki/Retina_Display), the new [Apple A5X](/wiki/Apple_A5X) processor with a [quad-core](/wiki/Multi-core_processor) [graphics processor](/wiki/Graphics_processing_unit), a 5-[megapixel](/wiki/Megapixel) camera, HD [1080p](/wiki/1080p) video recording, [voice dictation](/wiki/Digital_dictation), and [4G](/wiki/4G) ([LTE](/wiki/3GPP_Long_Term_Evolution)). The [fourth generation](/wiki/IPad_(fourth_generation)) added the [Apple A6X](/wiki/Apple_A6X) processor and replaces the [30-pin connector](/wiki/30-pin_dock_connector#Apple_30-pin_dock_connector) with an all-digital [Lightning connector](/wiki/Lightning_(connector)). The [iPad Air](/wiki/IPad_Air) added the [Apple A7](/wiki/Apple_A7) processor and the [Apple M7](/wiki/Apple_M7) motion coprocessor, and reduced the thickness for the first time since the iPad 2. The [iPad Air 2](/wiki/IPad_Air_2) added the [Apple A8X](/wiki/Apple_A8X) processor, the [Apple M8](/wiki/Apple_M8) [motion coprocessor](/wiki/Apple_motion_coprocessors), an 8-megapixel camera, and the [Touch ID](/wiki/Touch_ID) [fingerprint sensor](/wiki/Fingerprint_recognition), and further reduced the thickness.

There have been four [versions](/wiki/List_of_iOS_devices#iPad_Mini) of the [iPad Mini](/wiki/IPad_Mini). The [first generation](/wiki/IPad_Mini_(first_generation)) features a reduced screen size of 7.9 inches and features similar internal specifications as the iPad 2 except it uses the [Lightning connector](/wiki/Lightning_(connector)). The [iPad Mini 2](/wiki/IPad_Mini_2) features the [Retina Display](/wiki/Retina_Display), the [Apple A7](/wiki/Apple_A7) processor and the [Apple M7](/wiki/Apple_M7) [motion coprocessor](/wiki/Apple_motion_coprocessors), closely matching the internals specifications of the iPad Air. The [iPad Mini 3](/wiki/IPad_Mini_3) features the [Touch ID](/wiki/Touch_ID) fingerprint sensor. The [iPad Mini 4](/wiki/IPad_Mini_4) features the [Apple A8](/wiki/Apple_A8) and the [Apple M8](/wiki/Apple_M8) motion coprocessor.

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## History[[edit](/index.php?title=(none)&action=edit&section=1)]

[thumb|upright|](/wiki/File:Steve_Jobs_with_the_Apple_iPad_no_logo_(cropped).jpg)[Steve Jobs](/wiki/Steve_Jobs), Apple's then [Template:Abbr](/wiki/Template:Abbr), introducing the iPad. [upright|thumb|Apple's first tablet from 1993](/wiki/File:Apple_Newton-IMG_0454-cropped.jpg)

Apple co-founder [Steve Jobs](/wiki/Steve_Jobs) said in a 1983 speech[[4]](#cite_note-4) that the company's

[Template:Quote](/wiki/Template:Quote)

Apple's first tablet computer was the [Newton](/wiki/Newton_(platform)) [MessagePad 100](/wiki/MessagePad),[[5]](#cite_note-5)[[6]](#cite_note-6) introduced in 1993, powered by an [ARM6](/wiki/ARM_architecture) processor core developed by [ARM](/wiki/ARM_Limited), a 1990 spinout of [Acorn Computers](/wiki/Acorn_Computers) in which Apple invested. Apple also developed a prototype [PowerBook Duo](/wiki/PowerBook_Duo) based tablet, the [PenLite](/wiki/PowerBook_Duo#PenLite), but decided not to sell it in order to avoid hurting MessagePad sales.[[7]](#cite_note-7) Apple released several more Newton-based PDAs; the final one, the [MessagePad 2100](/wiki/MessagePad), was discontinued in 1998.

Apple re-entered the mobile-computing markets in 2007 with the [iPhone](/wiki/IPhone). Smaller than the iPad, but featuring a camera and mobile phone, it pioneered the [multi-touch](/wiki/Multi-touch) finger-sensitive touchscreen interface of Apple's [iOS](/wiki/IOS) mobile [operating system](/wiki/Operating_system). By late 2009, the iPad's release had been rumored for several years. Such speculation mostly talked about "Apple's tablet"; specific names included *iTablet* and *iSlate*.[[8]](#cite_note-8) The iPad was announced on January 27, 2010, by Steve Jobs at an Apple press conference at the [Yerba Buena Center for the Arts](/wiki/Yerba_Buena_Center_for_the_Arts) in San Francisco.[[9]](#cite_note-9)[[10]](#cite_note-10) Jobs later said that Apple had begun developing the iPad before the [iPhone](/wiki/IPhone).[[11]](#cite_note-11)<ref name=levgrossman>[Template:Cite web](/wiki/Template:Cite_web)</ref> [Jonathan Ive](/wiki/Jonathan_Ive) in 1991 had created an industrial design for a stylus-based tablet, the Macintosh Folio, as his first project for Apple; by 2004 his studio at the company was participating in the development of a large tablet prototype, which he later described as "very crude, involving projectors". Ive stated that after seeking to produce the tablet first, he came to agree with Jobs that the phone was more important,[[12]](#cite_note-12) as the tablet's innovations would work as well in it.[[13]](#cite_note-13) The iPad's internal codename was K48, which was revealed in the court case surrounding leaking of iPad information before launch.[[14]](#cite_note-14) Apple began taking pre-orders for the [first-generation](/wiki/IPad_(first_generation)) iPad on March 12, 2010.[[15]](#cite_note-15) The only major change to the device between its announcement and being available to pre-order was the change of the behavior of the side switch to perform either sound muting or screen rotation locking (user selectable).[[16]](#cite_note-16) The Wi-Fi version of the iPad went on sale in the [United States](/wiki/USA) on April 3, 2010.[[15]](#cite_note-15)[[17]](#cite_note-17) The Wi-Fi + 3G version was released on April 30.[[15]](#cite_note-15)[[18][18]](#cite_note-18) 3G service in the United States is provided by [AT&T](/wiki/AT&T_Mobility) and was initially sold with two prepaid contract-free data plan options: one for unlimited data and the other for 250 MB per month at half the price.[[19]](#cite_note-19)[[20]](#cite_note-20) On June 2, 2010, AT&T announced that effective June 7 the unlimited plan would be replaced for new customers with a 2 GB plan at slightly lower cost; existing customers would have the option to keep the unlimited plan.[[21]](#cite_note-21) The plans are activated on the iPad itself and can be cancelled at any time.[[22]](#cite_note-22) Initially, the iPad was only available to order at the [Apple Store](/wiki/Apple_Store), but has since become available for purchase through retailers including Amazon, Walmart, and network operators. The iPad was launched in countries including [Australia](/wiki/Australia), [Canada](/wiki/Canada), [France](/wiki/France), [Germany](/wiki/Germany), [Japan](/wiki/Japan) and the [United Kingdom](/wiki/United_Kingdom) on May 28.[[23]](#cite_note-23)[[24]](#cite_note-24) Online pre-orders in those countries began on May 10.[[18]](#cite_note-18) Apple released the iPad in [Hong Kong](/wiki/Hong_Kong), [Ireland](/wiki/Ireland), [Mexico](/wiki/Mexico), [New Zealand](/wiki/New_Zealand) and [Singapore](/wiki/Singapore) on July 23, 2010.[[25]](#cite_note-25)[[26]](#cite_note-26)[[27]](#cite_note-27) [Israel](/wiki/Israel) briefly prohibited importation of the iPad because of concerns that its Wi-Fi might interfere with other devices.[[28]](#cite_note-28) On September 17, 2010, the iPad was officially launched in [China](/wiki/China).[[29]](#cite_note-29) [Template:Formatnum:300000](/wiki/Template:Formatnum:300000) iPads were sold on their first day of availability.[[30]](#cite_note-30) By May 3, 2010, Apple had sold a million iPads;[[31]](#cite_note-31) this was in half the time it took Apple to sell the same number of first-generation iPhones.[[32]](#cite_note-32) After passing the one million mark they continued selling rapidly reaching 3 million sales after 80 days.[[33]](#cite_note-33) During the October 18, 2010, financial conference call, Steve Jobs announced that Apple had sold more iPads than Macs for the fiscal quarter.[[34]](#cite_note-34) In total, Apple sold more than 15 million first-generation iPads prior to the launch of the iPad 2[[35]](#cite_note-35)[Template:Snd](/wiki/Template:Snd) selling more than all other tablet PCs combined since the iPad's release.[[36]](#cite_note-36) and reaching 75% of tablet PC sales at the end of 2010.[[37]](#cite_note-37) Jobs unveiled the [iPad 2](/wiki/IPad_2) at a March 2, 2011, press conference.[[38]](#cite_note-38)[[39]](#cite_note-39) About 33% thinner than its predecessor and 15% lighter, the iPad 2 has a better processor, a [dual core](/wiki/Dual_core) [Apple A5](/wiki/Apple_A5) that Apple says is twice as fast as its predecessor for CPU operations and up to nine times as fast for GPU operations. The iPad 2 includes front and back cameras that support the [FaceTime](/wiki/FaceTime) [videophone](/wiki/Videophone) application, as well as a three-axis [gyroscope](/wiki/Gyroscope). It retained the original's 10‑hour battery life and had a similar pricing scheme.

The successor to the iPad 2 was unveiled on March 7, 2012, by Apple CEO [Tim Cook](/wiki/Tim_Cook) at the [Yerba Buena Center for the Arts](/wiki/Yerba_Buena_Center_for_the_Arts).[[40]](#cite_note-40)[[41]](#cite_note-41) [The new iPad](/wiki/IPad_(third_generation)) contained a new [dual core](/wiki/Multi-core_processor) A5X processor with quad-core graphics, and a [Retina Display](/wiki/Retina_Display) with a resolution of 2048 by 1536 pixels,[[42]](#cite_note-42) more than 50 percent more pixels than a standard [Template:Formatnum:1920](/wiki/Template:Formatnum:1920) by [Template:Formatnum:1080](/wiki/Template:Formatnum:1080) [high definition TV screen](/wiki/High-definition_television#High-definition_display_resolutions). A brief controversy erupted when it was revealed that the LTE advertised did not work in some countries.[[43]](#cite_note-43) On October 23, 2012, Apple announced the [fourth generation iPad](/wiki/IPad_(fourth_generation)), which began shipping on November 2, 2012. The new hardware includes an [A6X](/wiki/Apple_A6) processor, HD FaceTime camera, improved LTE compatibility, and the all-digital [Lightning](/wiki/Lightning_(connector)) connector. It is available in the same storage increments and pricing structure as the third generation.[[44]](#cite_note-44)[[45]](#cite_note-45) Following the announcement of the fourth-generation iPad, the previous generation was discontinued.

Alongside the launch of the 4th generation hardware, Apple announced the [iPad Mini](/wiki/IPad_Mini). With a screen measuring 7.9 inches, it is aimed at the emerging sector of [smaller tablets](/wiki/Mini_tablets) such as the [Kindle Fire](/wiki/Kindle_Fire) and [Nexus 7](/wiki/Nexus_7_(2012_version)). The hardware of the new iPad Mini is similar to the [iPad 2](/wiki/IPad_2), with a 1024 by 768 pixel resolution screen and a dual core [A5](/wiki/Apple_A5) processor, but is 53% lighter and 7.2 mm thick. It was released on November 2, 2012, in 16 GB, 32 GB, and 64 GB capacities and WiFi or Wi‑Fi + Cellular versions.[[45]](#cite_note-45) On October 22, 2013, Apple introduced the fifth generation of iPad, called the [iPad Air](/wiki/IPad_Air), and the second generation of iPad Mini, called [iPad Mini 2](/wiki/IPad_Mini_2) that comes with a [Retina Display](/wiki/Retina_Display). The iPad Air went on sale on November 1, 2013, starting at $499, while the iPad Mini 2 was released on November 12, 2013, starting at $399.

In October 2014, Apple released the [iPad Air 2](/wiki/IPad_Air_2) and the [iPad Mini 3](/wiki/IPad_Mini_3). The iPad Air 2 is the first iOS device to feature a triple core CPU and 2GB of RAM. As well as being thinner and faster than its predecessor, the iPad Air, it features [Touch ID](/wiki/Touch_ID) and is available with a gold color option. The iPad Mini 3 is similar than the iPad Mini 2 in design and hardware, but also includes Touch ID and available in gold color.

In September 2015, the [iPad Pro](/wiki/IPad_Pro) was announced, which included a 12.9-inch screen.<ref name=Dillet>[Template:Cite news](/wiki/Template:Cite_news)</ref>

In March 2016, the 9.7-inch [iPad Pro](/wiki/IPad_Pro) was announced. And Apple added a new 256 GB of storage for both the iPad Pro 9.7- & 12.9-inch.

## Hardware[[edit](/index.php?title=(none)&action=edit&section=2)]

### Screen and input[[edit](/index.php?title=(none)&action=edit&section=3)]

The iPad's (first two generations) [touchscreen](/wiki/Touchscreen) display is a 1024 by 768 pixel, [Template:Convert](/wiki/Template:Convert) [liquid-crystal display](/wiki/Liquid-crystal_display) (diagonal [Template:Convert](/wiki/Template:Convert)), with [fingerprint-](/wiki/Lipophobicity) and scratch-resistant glass. Steve Jobs said a 7-inch screen would be "too small to express the software" and that 10 inches was the minimum for a tablet screen.[[46]](#cite_note-46) Like the iPhone, the iPad is designed to be controlled by bare fingers; normal, non-conductive gloves and [styli](/wiki/Stylus) do not work,[[47]](#cite_note-47) although there are special gloves and [capacitive styli](/wiki/Capacitive_stylus) designed for this use.[[48]](#cite_note-48)[[49]](#cite_note-49) The display responds to other sensors: an ambient light sensor to adjust screen brightness and a 3-axis [accelerometer](/wiki/Accelerometer) to sense iPad orientation and switch between [portrait and landscape](/wiki/Page_orientation) modes. Unlike the iPhone and iPod Touch's built-in applications, which work in three orientations (portrait, landscape-left and landscape-right), the iPad's built-in applications support [screen rotation](/wiki/Screen_rotation) in all four orientations, including upside-down. Consequently, the device has no intrinsic "native" orientation; only the relative position of the home button changes.[[50]](#cite_note-50) There are four physical switches on the iPad, including a home button near the display that returns the user to the main menu, and three plastic physical switches on the sides: *wake/sleep* and *volume up/down*, plus a software-controlled switch whose function has changed with software updates. Originally the switch locked the screen to its current orientation, but the iOS 4.2 changed it to a mute switch, with rotation lock now available in an onscreen menu.[[51]](#cite_note-51) In the iOS 4.3 update, released with the iPad 2, a setting was added to allow the user to specify whether the side switch was used for rotation lock or mute.[[52]](#cite_note-52) The first generation iPad had no camera; the iPad 2 has a front [VGA](/wiki/VGA) camera and a rear-facing [720p](/wiki/720p) camera, both capable of still images (but these are only taken at a low quality 0.3 megapixels) and 30[fps](/wiki/Frame_rate) video. The rear-facing camera has a 5× [digital zoom](/wiki/Digital_zoom) for still images only. Both shoot photo and video in a [4:3](/wiki/4:3) fullscreen aspect ratio, unlike the [iPhone 4](/wiki/IPhone_4), which shoots in a [16:9](/wiki/16:9) widescreen aspect ratio. Unlike the iPhone, the iPad does not support tap to focus, but does allow a tap to set auto exposure.[[53]](#cite_note-53) The cameras allow [FaceTime](/wiki/FaceTime) video messaging with iPhone 4, fourth generation iPod Touch, and [Snow Leopard](/wiki/Mac_OS_X_Snow_Leopard), [Lion](/wiki/Mac_OS_X_Lion), and [Mountain Lion](/wiki/OS_X_Mountain_Lion) [Macs](/wiki/Macintosh).[[54]](#cite_note-54)

### Audio and output[[edit](/index.php?title=(none)&action=edit&section=4)]

The iPad has two internal speakers reproducing left and right channel audio located on the bottom-right of the unit. In the original iPad, the speakers push sound through two small sealed channels leading to the three audio ports carved into the device,[[55]](#cite_note-55) while the iPad 2 has its speakers behind a single grill.[[56]](#cite_note-56) A volume switch is on the right side of the unit. A 3.5-mm [TRRS connector](/wiki/Phone_connector_(audio)) audio-out jack on the top-left corner of the device provides stereo sound for headphones with or without microphones and/or volume controls. The iPad also contains a microphone that can be used for [voice recording](/wiki/Sound_recording_and_reproduction).

The built-in [Bluetooth 2.1 + EDR](/wiki/Bluetooth_2.1) interface allows wireless headphones and keyboards to be used with the iPad.[[57]](#cite_note-57) However iOS does not currently support [file transfer](/wiki/Bluetooth_protocols#Object_exchange_(OBEX)) via Bluetooth.[[58]](#cite_note-58) iPad also features 1024×768 VGA video output for limited applications,[[59]](#cite_note-59) screen capture,[[60]](#cite_note-60) connecting an external display or television through an accessory adapter.

### Battery[[edit](/index.php?title=(none)&action=edit&section=5)]

The iPad uses an internal [rechargeable](/wiki/Rechargeable_battery) [lithium-ion polymer](/wiki/Lithium-ion_polymer) (LiPo) battery. The batteries are made in [Taiwan](/wiki/Taiwan) by Simplo Technology (60%) and Dynapack International Technology.[[61]](#cite_note-61) The iPad is designed to be charged with a high current of 2 amperes using the included 10 W USB power adapter and USB cord with a USB connector at one end and a 30-pin dock connector at the other end. While it can be charged by a standard USB port from a computer, these are limited to 500 milliamperes (0.5 amps). As a result, if the iPad is running while powered by a normal USB computer port, it may charge very slowly, or not at all. High-power USB ports found in newer Apple computers and accessories provide full charging capabilities.[[62]](#cite_note-62) Apple claims that the battery for both generations of iPad can provide up to 10 hours of video, 140 hours of audio playback, or one month on standby. Like any rechargeable battery technology, the iPad's battery loses capacity over time, but is not designed to be user-replaceable. In a program similar to the battery-replacement program for the [iPod](/wiki/IPod) and the original iPhone, Apple will replace an iPad that does not hold an electrical charge with a refurbished iPad for a fee of US$99 plus $6.95 shipping.[[63]](#cite_note-63)[[64]](#cite_note-64) As a different unit is supplied, user data is not preserved. The refurbished unit will have a new case.[[65]](#cite_note-65) The warranty on the refurbished unit may vary between jurisdictions.

Independent companies also provide a battery replacement service, returning the original unit with new battery but original case. Alternatively it is possible for a technically competent user to buy and install a new battery. The task does not require soldering, but is technically challenging.[[66]](#cite_note-66)

### Storage[[edit](/index.php?title=(none)&action=edit&section=6)]

The iPad was released with three capacity options for storage: 16, 32, or 64 GB of internal [flash memory](/wiki/Flash_memory). On January 29, 2013, Apple announced a 128 GB model of the [fourth generation iPad](/wiki/IPad_(fourth_generation)), which was released on February 5.[[67]](#cite_note-67) All data is stored on the internal flash memory, with no option to expand storage. Apple sells a "camera connection kit" with an [SD card](/wiki/SD_card) reader, but it can only be used to transfer photos and videos.[[68]](#cite_note-68) On March 21, Apple announced a 256 GB model of the [iPad Pro](/wiki/IPad_Pro), which was released on March 31.

### Cellular connectivity[[edit](/index.php?title=(none)&action=edit&section=7)]

iPad models come in two basic variants: Wi-Fi only and Wi-Fi with cellular support. The cellular variants however do not support circuit-switched voice calls and texts, only data connectivity. The side of the [Wi-Fi](/wiki/Wi-Fi) + [3G](/wiki/3G) iPad had a [micro-SIM](/wiki/Subscriber_identity_module#Card_sizes) slot (not [mini-SIM](/wiki/Subscriber_identity_module)). The 3G iPad can be used with any compatible [GSM](/wiki/GSM) carrier, unlike the iPhone, which is usually sold ['locked' to specific carriers](/wiki/SIM_lock).[[69]](#cite_note-69) On the first generations of the iPad in the U.S., data network access via [T-Mobile's](/wiki/T-Mobile_US) network was limited to slower [EDGE](/wiki/Enhanced_Data_Rates_for_GSM_Evolution) cellular speeds because T-Mobile's 3G Network at the time used different frequencies.[[70]](#cite_note-70)[[71]](#cite_note-71) The [second generation iPad](/wiki/IPad_(2nd_generation)) introduced a third tier of models with [CDMA](/wiki/CDMA) support for [Verizon Wireless](/wiki/Verizon_Wireless) in the United States, available separately from the [AT&T](/wiki/AT&T_Mobility) capable version.[[72]](#cite_note-72) The iPad up to the 4th generation uses a Micro-SIM, while the first generation iPad Mini uses a nano-SIM as introduced with the iPhone 5. The iPad mini is available with two different frequency bands worldwide. Both devices support the same quad-band GSM and quad-band UMTS frequencies, but one variant also supports LTE bands 4 and 17 (principally intended for use on the U.S. AT&T network), while the other adds support for [LTE](/wiki/LTE_(telecommunication)) bands 1, 3, 5, 13, 25 and CDMA EV-DO Rev. A and Rev. B.

The 5th generation iPad and 2nd generation iPad mini introduced support for many additional LTE bands worldwide. The iPad Air and Mini with Retina display cellular models come in two variants each, all of which support nano-SIMs, quad-band GSM, penta-band UMTS, and dual-band CDMA EV-DO Rev. A and B. Additionally, one variant of each iPad also supports LTE bands 1, 2, 3, 4, 5, 7, 8, 13, 17, 18, 19, 20, 25 and 26 while the other variant supports LTE bands 1, 2, 3, 5, 7, 8, 18, 19, 20 and [TD-LTE](/wiki/Time-Division_Long-Term_Evolution) bands 38, 39 and 40. Apple's ability to handle many different bands in one device allowed it to offer, for the first time, a single iPad variant which supports all the cellular bands and technologies deployed by all the major North American wireless providers at the time of the device's introduction. Moreover, with T-Mobile USA selling the iPad Air and Mini with Retina display, these models became the first iPads that were made available for purchase directly from all four nationwide U.S. wireless carriers (and, as previously indicated, with all U.S. carriers now selling the same hardware variant of the device).

### Accessories[[edit](/index.php?title=(none)&action=edit&section=8)]

[Template:Main](/wiki/Template:Main) Apple offers several iPad accessories,[[73]](#cite_note-73) most of which are adapters for the proprietary 30-pin [dock connector](/wiki/Dock_connector), the iPad's only port besides the headphone jack.[[52]](#cite_note-52) A dock holds the iPad upright at an angle, and has a dock connector and audio line out port. Each generation of iPad requires a corresponding dock. A dock that included a physical keyboard was only supported for the original iPad,[[74]](#cite_note-74) but all generations are compatible with Bluetooth keyboards that also work with [Macs](/wiki/Macintosh) and [PCs](/wiki/Personal_computer). The iPad can be charged by a standalone power adapter ("wall charger") also used for iPods and iPhones, and a 10 W charger is included with the iPad.

Apple sells a camera connection kit that consists of two separate adapters for the dock connector, one to [USB](/wiki/USB) Type A, the other an [SD](/wiki/Secure_Digital) card reader. Adapter can be used to transfer photos and videos and to plug USB [audio card](/wiki/USB_sound_card) or [MIDI keyboard](/wiki/MIDI_keyboard).[[75]](#cite_note-75)A third party sells an adapter that includes USB, SD, and [microSD](/wiki/MicroSD) on a single unit.[[76]](#cite_note-76) An adapter to [VGA connectors](/wiki/VGA_connector) allows the iPad to work with external monitors and projectors. Another adapter mirrors the screen onto [HDMI](/wiki/HDMI) compatible devices in 1080p and works with all apps and rotations. Unlike other adapters, it allows the iPad to charge through another dock connector.[[77]](#cite_note-77) While the HDMI adapter was released with and advertised for the [second generation iPad](/wiki/IPad_(second_generation)), it also works with the first-generation iPad, the [iPhone 4](/wiki/IPhone_4), and the fourth generation iPod Touch.<ref name=AVadapter>[Template:Cite web](/wiki/Template:Cite_web)</ref>

Smart Covers are screen protectors that magnetically attach and align to the face of the iPad 2, 3, or 4. The cover has three folds which allow it to convert into a stand, which is also held together by magnets.<ref name=SmartCoverTeardown>[Template:Cite web](/wiki/Template:Cite_web)</ref> While original iPad owners could purchase a black case that included a similarly folding cover, the Smart Cover is meant to be more minimal, easily detachable, and protects only the screen. Smart Covers have a [microfiber](/wiki/Microfiber) bottom that cleans the front of the iPad, which wakes up when the cover is removed. There are five different colors of both polyurethane and leather, with leather being more expensive. Smart Covers are not compatible with the original iPad.[[78]](#cite_note-78) In June 2012, Apple started selling the Smart Case - a case with the combined function of a smart cover and a back protection case which is compatible with the iPad 2, and iPad 3rd & 4th generation devices.[[79]](#cite_note-79)

## Software[[edit](/index.php?title=(none)&action=edit&section=9)]

Like the iPhone, with which it shares a [development environment](/wiki/Development_environment_(software_development_process))[[80]](#cite_note-80) the iPad only runs its own software, software downloaded from Apple's [App Store](/wiki/App_Store_(iOS)), and software written by developers who have paid for a developer's license on registered devices.[[81]](#cite_note-81)[Template:Failed verification](/wiki/Template:Failed_verification) The iPad runs almost all third-party [iPhone applications](/wiki/IPhone_applications), displaying them at iPhone size or enlarging them to fill the iPad's screen.[[82]](#cite_note-82) Developers may also create or modify apps to take advantage of the iPad's features.[[83]](#cite_note-83) Application developers use iOS SDK for developing applications for iPad.[[84]](#cite_note-84) The iPad originally shipped with a customized iPad-only version of iPhone OS, dubbed v3.2. On September 1, it was announced the iPad would get iOS 4.2 by November 2010;[[85]](#cite_note-85) to fulfill this Apple released iOS 4.2.1 to the public on November 22.[[86]](#cite_note-86)

### Interface[[edit](/index.php?title=(none)&action=edit&section=10)]

The [interface](/wiki/Graphical_user_interface) is centred around the home screen, a graphical list of available applications. The home screen can be accessed at any time by a hardware button below the screen, closing an open application in the process.[[87]](#cite_note-87) Users can also add and delete icons from the dock, which is the same on every home screen. Each home screen holds up to twenty icons, and the dock holds up to six icons. Users can delete Web Clips and third-party applications at any time, and may select only certain applications for transfer from iTunes. Apple's default programs, however, may not be removed.

Almost all input is given through the touch screen, which understands complex gestures using [multi-touch](/wiki/Multi-touch). The iPad's [interaction techniques](/wiki/Interaction_technique) enable the user to move the content up or down by a touch-drag motion of the finger. For example, zooming in and out of web pages and photos is done by placing two fingers on the screen and spreading them farther apart or bringing them closer together, a gesture known as "[pinching](/wiki/Multi-touch)".

Scrolling through a long list or menu is achieved by sliding a finger over the display from bottom to top, or vice versa to go back. In either case, the list moves as if it is pasted on the outer surface of a wheel, slowly decelerating as if affected by friction. In this way, the interface simulates the physics of a real object.

Other [user-centered](/wiki/User-centered_design) [interactive](/wiki/Interactive_design) effects include horizontally sliding sub-selection, the vertically sliding keyboard and bookmarks menu, and widgets that turn around to allow settings to be configured on the other side. Menu bars are found at the top and bottom of the screen when necessary. Their options vary by program, but always follow a consistent style motif. In menu hierarchies, a "back" button in the top-left corner of the screen displays the name of the parent folder.

### Multimedia[[edit](/index.php?title=(none)&action=edit&section=11)]

The layout of the music library is similar to that of an [iPod](/wiki/IPod) or current [Symbian](/wiki/Symbian) [S60](/wiki/S60_(software_platform)) phones. The iPad can sort its media library by songs, artists, albums, videos, [playlists](/wiki/Playlist), [genres](/wiki/Genre), composers, [podcasts](/wiki/Podcast), [audiobooks](/wiki/Audiobook), and [compilations](/wiki/Compilation_album). Options are always presented alphabetically, except in playlists, which retain their order from [iTunes](/wiki/ITunes). The iPhone uses a large font that allows users plenty of room to touch their selection.

Users can rotate their device horizontally to [landscape mode](/wiki/Page_orientation) to access [Cover Flow](/wiki/Cover_Flow). Like on iTunes, this feature shows the different album covers in a scroll-through photo library. Scrolling is achieved by swiping a finger across the screen. Alternatively, headset controls can be used to pause, play, skip, and repeat tracks.

The iPad supports [gapless playback](/wiki/Gapless_playback).[[88]](#cite_note-88) Like the [fifth-generation iPods](/wiki/IPod_Classic#Fifth_generation) introduced in 2005, the iPad can play [digital video](/wiki/Digital_video), allowing users to watch TV shows and movies in [widescreen](/wiki/Widescreen). Double-tapping switches between widescreen and [fullscreen](/wiki/4:3) video playback.

The iPad allows users to purchase and download songs from the iTunes Store directly to their iPad. It includes software that allows the user to upload, view, and email photos taken with the [camera](/wiki/#Camera). The user zooms in and out of photos by sliding two fingers further apart or closer together, much like Safari. The Camera application also lets users view the camera roll, the pictures that have been taken with the iPad's camera. Those pictures are also available in the Photos application, along with any transferred from [iPhoto](/wiki/IPhoto) or [Aperture](/wiki/Aperture_(software)) on a Mac, or [Photoshop](/wiki/Adobe_Photoshop) on a Windows [PC](/wiki/Personal_computer).

### Internet connectivity[[edit](/index.php?title=(none)&action=edit&section=12)]

The iPad can use Wi-Fi network [trilateration](/wiki/Trilateration) from [Skyhook Wireless](/wiki/Skyhook_Wireless) to provide location information to applications such as [Google Maps](/wiki/Google_Maps). The 3G model supports [A-GPS](/wiki/Assisted_GPS) to allow its position to be calculated with GPS or relative to nearby cellphone towers; it also has a black strip on the back to aid 3G reception.[[89]](#cite_note-89) The iPad has a [headphone jack](/wiki/Phone_connector_(audio)) and a proprietary Apple [dock connector](/wiki/Dock_connector), but no [Ethernet](/wiki/Ethernet) or USB port.[[52]](#cite_note-52) However, the Apple Camera Connection Kit accessory provides two dock connector adapters for importing photos and videos via USB and SD memory cards.

### Applications[[edit](/index.php?title=(none)&action=edit&section=13)]

The iPad comes with several applications, including Safari, Mail, Photos, Video, iPod, [iTunes](/wiki/ITunes), App Store, [iBooks](/wiki/IBooks), [Maps](/wiki/Apple_Maps), Notes, Calendar, and Contacts.[[90]](#cite_note-90) Several are improved versions of applications developed for the iPhone or [Mac](/wiki/Macintosh).

The iPad syncs with iTunes on a Mac or Windows PC.[[9]](#cite_note-9) Apple ported its [iWork](/wiki/IWork) suite from the Mac to the iPad, and sells pared down versions of [Pages](/wiki/Pages_(word_processor)), [Numbers](/wiki/Numbers_(spreadsheet)), and [Keynote](/wiki/Keynote_(presentation_software)) apps in the App Store.[[91]](#cite_note-91) Although the iPad is not designed to replace a mobile phone, a user can use a wired headset or the built-in speaker and microphone and place telephone calls over Wi-Fi or 3G using a [VoIP](/wiki/VoIP) application.[[92]](#cite_note-92) As of June 2012, there were about [Template:Formatnum:225000](/wiki/Template:Formatnum:225000) iPad specific apps on the App Store.[[93]](#cite_note-93) In December 2010, Reuters reported that iPhone and iPad users have lodged a lawsuit against Apple alleging that some applications were passing their information to third party advertisers without consent.[[94]](#cite_note-94)

### iBooks[[edit](/index.php?title=(none)&action=edit&section=14)]

[Template:Further](/wiki/Template:Further) The iPad has an optional [iBooks](/wiki/IBooks) application that can be downloaded from the App Store, which displays books and other [ePub](/wiki/EPub)-format content downloaded from the [iBookstore](/wiki/IBookstore).<ref name=engadget>[Template:Cite web](/wiki/Template:Cite_web)</ref> For the iPad launch on April 3, 2010, the iBookstore is available only in the United States.[[15]](#cite_note-15)[[9]](#cite_note-9)[[90]](#cite_note-90) Several major book publishers including Penguin Books, HarperCollins, Simon & Schuster and Macmillan have committed to publishing books for the iPad.[[95]](#cite_note-95) Despite its being a direct competitor to both the [Amazon Kindle](/wiki/Amazon_Kindle) and [Barnes & Noble Nook](/wiki/Barnes_&_Noble_Nook),[[96]](#cite_note-96) both [Amazon.com](/wiki/Amazon.com) and [Barnes & Noble](/wiki/Barnes_&_Noble) have made Kindle and Nook apps available for the iPad.[[97]](#cite_note-97)[[98]](#cite_note-98) In February 2010, Condé Nast said it would sell iPad subscriptions for several of its magazines by June.[[99]](#cite_note-99) In April 2010, the New York Times announced that it would begin publishing daily on the iPad.[[100]](#cite_note-100) The "Top News" section is available free of charge, and the remainder on payment of a [subscription](/wiki/Subscription_business_model).[[101]](#cite_note-101) Major news organizations, including [*The Wall Street Journal*](/wiki/The_Wall_Street_Journal), the [BBC](/wiki/BBC), and [Reuters](/wiki/Reuters) have released iPad applications. [NewsCorp](/wiki/NewsCorp) created an iPad-only publication, [*The Daily*](/wiki/The_Daily_(News_Corporation)), in February 2011.[[102]](#cite_note-102) It ceased operations in December 2012.

## Model comparison[[edit](/index.php?title=(none)&action=edit&section=15)]

### iPad series[[edit](/index.php?title=(none)&action=edit&section=16)]

|  |  |
| --- | --- |
| Discontinued | Current |

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Model** | | [**iPad (1st generation)**](/wiki/IPad_(1st_generation)) | [**iPad 2**](/wiki/IPad_(2nd_generation)) | [**iPad**](/wiki/IPad_(3rd_generation))[**(3rd generation)**](/wiki/IPad_(3rd_generation)) | [**iPad**](/wiki/IPad_(4th_generation))[**(4th generation)**](/wiki/IPad_(4th_generation)) | [**iPad Air**](/wiki/IPad_Air) | [**iPad Air 2**](/wiki/IPad_Air_2) |
| **Image** | | [50px](/wiki/File:IPad_1_PSD_Mockup.png) | [50px](/wiki/File:IPad_3.png) | [50px](/wiki/File:IPad_3.png) | [50px](/wiki/File:IPad_3.png) | [50px](/wiki/File:IPad_Air.png) | [50px](/wiki/File:IPad_Air_2.png) |
| **Initial** [**operating system**](/wiki/Operating_system) | | [iOS 3.2](/wiki/IPhone_OS_3) | [iOS 4.2.1](/wiki/IOS_4) | [iOS 5.1](/wiki/IOS_5) | [iOS 6.0](/wiki/IOS_6) | [iOS 7.0.3](/wiki/IOS_7) | [iOS 8.1](/wiki/IOS_8) |
| **Highest supported operating system** | | [iOS 5.1.1](/wiki/IOS_5) | [iOS 9.3](/wiki/IOS_9).1 | | | | | | | | | | | | | | | | | | | |
| **Model Number** [**[103]**](#cite_note-103)[**[104]**](#cite_note-104) | | A1219 (WiFi) A1337 (WiFi + 3G) | A1395 (WiFi) A1397 (WiFi + 3G CDMA) A1396 (WiFi + 3G GSM) | A1416 (WiFi) A1403 (WiFi + Cellular VZ) A1430 (WiFi + Cellular) | A1458 (WiFi) A1459 (WiFi + Cellular) A1460 (WiFi + Cellular MM) | A1474 (WiFi) A1475 (WiFi + Cellular) A1476 (Wi-Fi + Cellular TD-LTE) | A1566 (WiFi) A1567 (WiFi + Cellular) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Announcement date** | | January 27, 2010[[9]](#cite_note-9) | March 2, 2011[[35]](#cite_note-35) | March 7, 2012 | 16, 32, 64 GB: October 23, 2012 128 GB: January 29, 2013 | October 22, 2013 | October 16, 2014 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Release date** | | April 3, 2010[[15]](#cite_note-15) | March 11, 2011[[105]](#cite_note-105) | March 16, 2012 | 16, 32, 64 GB: November 2, 2012 128 GB: February 5, 2013 16 GB re-released: March 18, 2014 | November 1, 2013 | October 22, 2014[[106]](#cite_note-106) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Discontinued** | | March 2, 2011[[35]](#cite_note-35) | 32, 64 GB: March 7, 2012 16 GB: March 18, 2014 | October 23, 2012 | 16, 32, 64, 128 GB: October 22, 2013 16 GB re-released: October 16, 2014 | 64, 128 GB: October 16, 2014 16, 32 GB: March 21, 2016 | In production |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Launch price** | | Wi-Fi models: 16 GB $499, 32 GB $599, 64 GB $699 Wi-Fi + 3G models: 16 GB $629, 32 GB $729, 64 GB $829 | Wi-Fi models: 16 GB $499, 32 GB $599, 64 GB $699 Wi-Fi + 3G models: 16 GB $629, 32 GB $729, 64 GB $829 | Wi-Fi models: 16 GB $499, 32 GB $599, 64 GB $699 Wi-Fi + Cellular models: 16 GB $629, 32 GB $729, 64 GB $829 | Wi-Fi models: 16 GB $499, 32 GB $599, 64 GB $699, 128 GB $799 Wi-Fi + Cellular models: 16 GB $629, 32 GB $729, 64 GB $829, 128 GB $929 | Wi-Fi models: 16 GB $499, 32 GB $599, 64 GB $699, 128 GB $799 Wi-Fi + Cellular models: 16 GB $629, 32 GB $729, 64 GB $829, 128 GB $929 | Wi-Fi models: 16 GB $499, 64 GB $599, 128 GB $699 Wi-Fi + Cellular models: 16 GB $629, 64 GB $729, 128 GB $829 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**SoC**](/wiki/System_on_a_chip) | [Apple A4](/wiki/Apple_A4)[[107]](#cite_note-107) | [Apple A5](/wiki/Apple_A5) | [Apple A5X](/wiki/Apple_A5X)[[108]](#cite_note-108) | [Apple A6X](/wiki/Apple_A6X) | [Apple A7](/wiki/Apple_A7) | [Apple A8X](/wiki/Apple_A8X) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Motion coprocessor** | [Template:N/a](/wiki/Template:N/a) | [Template:N/a](/wiki/Template:N/a) | [Template:N/a](/wiki/Template:N/a) | [Template:N/a](/wiki/Template:N/a) | [Apple M7](/wiki/Apple_M7) | [Apple M8](/wiki/Apple_M8) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**CPU**](/wiki/Central_processing_unit) | 1 GHz [ARM Cortex-A8](/wiki/ARM_Cortex-A8) | colspan=2|1 GHz dual-core [ARM Cortex-A9](/wiki/ARM_Cortex-A9) | 1.4 GHz dual-core [Apple Swift](/wiki/Apple_A6X) | 1.4 GHz dual-core [Apple](/wiki/Apple_Inc.) Cyclone | 1.5 GHz tri-core[[109]](#cite_note-109) [Apple](/wiki/Apple_Inc.) Typhoon |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**GPU**](/wiki/Graphics_processing_unit) | [PowerVR](/wiki/PowerVR) [SGX535](/wiki/PowerVR#Series_5_(SGX)) | Dual-core PowerVR [SGX543MP2](/wiki/PowerVR#Series_5XT_(SGXMP)) | Quad-core PowerVR SGX543MP4 | Quad-core PowerVR SGX554MP4 | Quad-core PowerVR [G6430](/wiki/PowerVR#Series_6_(Rogue))[[110]](#cite_note-110) | Octa-core PowerVR GXA6850[[111]](#cite_note-111) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Memory** | 256 MB [DDR](/wiki/DDR_SDRAM) [RAM](/wiki/Random-access_memory) built into Apple A4 package[[112]](#cite_note-112) | 512 MB [DDR2](/wiki/DDR2_SDRAM) RAM (1066 Mbit/s [data rate](/wiki/DDR2_SDRAM#Chips_and_modules)) built into Apple A5 package[[56]](#cite_note-56) | colspan=2|1 GB LPDDR2 RAM | 1 GB LPDDR3 RAM | 2 GB LPDDR3 RAM[[113]](#cite_note-113)[[109]](#cite_note-109) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**Storage**](/wiki/Data_storage_device) | 16, 32, or 64 [GB](/wiki/Gigabyte)[[52]](#cite_note-52) | | | 16, 32, 64, or 128 [GB](/wiki/Gigabyte)[[52]](#cite_note-52)[[67]](#cite_note-67) | | 16, 64, or 128 [GB](/wiki/Gigabyte)[[113]](#cite_note-113) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| [**Display**](/wiki/Display_device) | | [Template:Convert](/wiki/Template:Convert) [multi-touch](/wiki/Multi-touch) display with [LED](/wiki/Light-emitting_diode) backlighting and a fingerprint and scratch-resistant coating[[52]](#cite_note-52) | | | | | Additionally: Fully laminated display, Antireflective coating[[114]](#cite_note-114) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1024×768 [pixels](/wiki/Pixel) at 132 [ppi](/wiki/Pixel_density) | | 2048×1536 [pixels](/wiki/Pixel) at 264 [ppi](/wiki/Pixel_density) ([Retina Display](/wiki/Retina_Display)) | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Camera** | **Back** | [Template:N/a](/wiki/Template:N/a) | [720](/wiki/720p) [p](/wiki/Progressive_scan) [HD](/wiki/High-definition_video) still and video camera 0.7 [MP](/wiki/Megapixels), 30[fps](/wiki/Frame_rate) and 5× digital zoom | colspan=3|[1080p](/wiki/1080p) HD still and video camera 5 MP, 30fps and 5× digital zoom | [1080p](/wiki/1080p) HD still and video camera 8 MP, 30fps and 3× digital zoom |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Front** | [Template:N/a](/wiki/Template:N/a) | colspan=2|[VGA](/wiki/VGA)-quality still and videocamera, 0.3 MP | colspan=3|1.2 MP still, 720p video |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**Audio codec**](/wiki/Audio_codec) |  |  |  |  |  | [Cirrus Logic](/wiki/Cirrus_Logic) 338S1213[[115]](#cite_note-115) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **rowspan=2|**[**Wireless**](/wiki/Wireless) | **Wi-Fi** | [Wi-Fi](/wiki/Wi-Fi) ([802.11a/b/g/n](/wiki/IEEE_802.11n-2009)), [Bluetooth 2.1+EDR](/wiki/Bluetooth_2.1)[[52]](#cite_note-52) | | [Wi-Fi](/wiki/Wi-Fi) ([802.11a/b/g/n](/wiki/IEEE_802.11n-2009)), [Bluetooth 4.0](/wiki/Bluetooth#Bluetooth_v4.0) | | | [Wi-Fi](/wiki/Wi-Fi) ([802.11a/b/g/n/ac](/wiki/IEEE_802.11n-2009)), [Bluetooth 4.0](/wiki/Bluetooth#Bluetooth_v4.0) | | |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Wi-Fi + 3G/Cellular** | In addition to above: 3G cellular [HSDPA](/wiki/HSDPA), 2G cellular [EDGE](/wiki/EDGE) on 3G models[[52]](#cite_note-52) | | In addition to above and left: [3G](/wiki/3G) transitional [LTE](/wiki/3GPP_Long_Term_Evolution) on Cellular model | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| [**Geolocation**](/wiki/Geolocation) | **Wi-Fi** | Wi-Fi,[[52]](#cite_note-52) Apple location databases<ref name=Techcrunch>[Template:Cite web](/wiki/Template:Cite_web)</ref> | | | | | Additionally: [iBeacon](/wiki/IBeacon) microlocation[[114]](#cite_note-114) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Wi-Fi + 3G/Cellular** | [Assisted GPS](/wiki/Assisted_GPS), Apple databases,<ref name=Techcrunch/> [Cellular network](/wiki/Radiolocation)[[52]](#cite_note-52) | | Additionally: [GLONASS](/wiki/GLONASS) | | | Additionally: [iBeacon](/wiki/IBeacon) microlocation[[114]](#cite_note-114) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Environmental** [**sensors**](/wiki/Sensor) | [Accelerometer](/wiki/Accelerometer), [ambient light sensor](/wiki/Photodetector), [magnetometer](/wiki/Magnetometer)[[52]](#cite_note-52) | colspan=4|Additionally: [gyroscope](/wiki/Gyroscope) | Additionally: [barometer](/wiki/Barometer)[[116]](#cite_note-116) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**Battery**](/wiki/Battery_(electricity)) | [Template:Nowrap](/wiki/Template:Nowrap) [mA·h](/wiki/Ampere-hour))[[117]](#cite_note-117) | [Template:Nowrap](/wiki/Template:Nowrap) [Template:Nowrap](/wiki/Template:Nowrap) (6,944 mA·h)[[118]](#cite_note-118) | colspan=2|[Template:Nowrap](/wiki/Template:Nowrap) [Template:Nowrap](/wiki/Template:Nowrap) (11,560 mA·h)[[119]](#cite_note-119)[[120]](#cite_note-120) | [Template:Nowrap](/wiki/Template:Nowrap) [Template:Nowrap](/wiki/Template:Nowrap) (8,820 mA·h)[[121]](#cite_note-121) | [Template:Nowrap](/wiki/Template:Nowrap) [Template:Nowrap](/wiki/Template:Nowrap) (7,340 mA·h)[[115]](#cite_note-115) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Dimensions** | [Template:Convert](/wiki/Template:Convert)[[52]](#cite_note-52)[[122]](#cite_note-122) | [Template:Convert](/wiki/Template:Convert)[[122]](#cite_note-122) | colspan=2|[Template:Convert](/wiki/Template:Convert) | [Template:Convert](/wiki/Template:Convert) | [Template:Convert](/wiki/Template:Convert) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Weight** | Wi-Fi model: [Template:Convert](/wiki/Template:Convert) Wi-Fi + 3G model: [Template:Convert](/wiki/Template:Convert) | Wi-Fi model: [Template:Convert](/wiki/Template:Convert) Wi-Fi + 3G GSM (AT&T/global) model: [Template:Convert](/wiki/Template:Convert) Wi-Fi + 3G CDMA (Verizon) model: [Template:Convert](/wiki/Template:Convert) | colspan=2|Wi-Fi model: [Template:Convert](/wiki/Template:Convert) Wi-Fi + Cellular model: [Template:Convert](/wiki/Template:Convert) | colspan=1|Wi-Fi model: [Template:Convert](/wiki/Template:Convert) Wi-Fi + Cellular model: [Template:Convert](/wiki/Template:Convert) | colspan=1|Wi-Fi model: 0.96 lb (437 g) Wi-Fi + Cellular model: 0.98 lb (444 g) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Mechanical keys** | colspan=5|Home, sleep, volume rocker, variable function switch (originally screen rotation lock, mute in iOS 4.2, either in 4.3 and later)[[52]](#cite_note-52) | Without variable function switch[[109]](#cite_note-109) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Connector** | colspan=3|[30-pin dock connector](/wiki/Dock_connector) | colspan=3|[Lightning Connector](/wiki/Lightning_(connector)) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Additional Features** | colspan=5| | [Touch ID](/wiki/Touch_ID) (finger-print scanner in home button) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Greenhouse gas emissions** | colspan=2|130 kg CO2e[[123]](#cite_note-123)[[124]](#cite_note-124) | 180 kg CO2e[[125]](#cite_note-125) | 170 kg CO2e[[126]](#cite_note-126) | 210 kg CO2e[[127]](#cite_note-127) | 190 kg CO2e[[128]](#cite_note-128) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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### iPad mini series[[edit](/index.php?title=(none)&action=edit&section=17)]

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| **Model** | | [**iPad Mini (1st generation)**](/wiki/IPad_Mini_(1st_generation)) | [**iPad Mini 2**](/wiki/IPad_Mini_2) | [**iPad Mini 3**](/wiki/IPad_Mini_3) | [**iPad Mini 4**](/wiki/IPad_Mini_4) |
| **Image** | | [50px](/wiki/File:IPadminiBlack.png) | [50px](/wiki/File:IPadminiWhite.png) | [50px](/wiki/File:IPad_Mini_3_Gold.png) | [50px](/wiki/File:IPad_Mini_3_Gold.png) |
| **Initial** [**operating system**](/wiki/Operating_system) | | [iOS 6.0](/wiki/IOS_6) | [iOS 7.0](/wiki/IOS_7) | [iOS 8.1](/wiki/IOS_8) | [iOS 9.0](/wiki/IOS_9) |
| **Highest supported operating system** | | [iOS 9.3](/wiki/IOS_9).1 | | | | | | | | | | | | | | | | | | | |
| **Model Number** [**[103]**](#cite_note-103)[**[104]**](#cite_note-104) | | A1432 (Wi-Fi) A1454 (Wi-Fi + Cellular) A1455 (Wi-Fi + Cellular MM) | A1489 (Wi-Fi) A1490 (Wi-Fi + Cellular) A1491 (Wi-Fi + Cellular [TD-LTE](/wiki/LTE_(telecommunication))) | A1599 (Wi-Fi) A1600 (Wi-Fi + Cellular) A1601 (Wi-Fi + Cellular TD-LTE) | A1538 (Wi-Fi) A1550 (Wi-Fi + Cellular) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Announcement date** | | October 23, 2012 | October 22, 2013 | October 16, 2014 | September 9, 2015 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Release date** | | November 2, 2012 | November 12, 2013 | October 22, 2014[[129]](#cite_note-129) | September 9, 2015 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Discontinued** | | 32, 64 GB: October 22, 2013 16 GB: June 19, 2015 | 64, 128 GB: October 16, 2014 16, 32 GB: In production | September 9, 2015 | In production |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Launch price** | | Wi-Fi models: 16 GB US$329, 32 GB US$429, 64 GB US$529 [Wi-Fi](/wiki/Wi-Fi) + [Cellular](/wiki/Cellular_network) models: 16 GB $459, 32 GB $559, 64 GB $659 | Wi-Fi models: 16 GB $399, 32 GB $499, 64 GB $599, 128 GB $699 Wi-Fi + Cellular models: 16 GB $529, 32 GB $629, 64 GB $729, 128 GB $829 | Wi-Fi models: 16 GB $399, 64 GB $499, 128 GB $599 Wi-Fi + Cellular models: 16 GB $529, 64 GB $629, 128 GB $729 | Wi-Fi models: 16 GB $399, 64 GB $499, 128 GB $599 Wi-Fi + Cellular models: 16 GB $529, 64 GB $629, 128 GB $729 |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**SoC**](/wiki/System_on_a_chip) | [Apple A5](/wiki/Apple_A5) | [Apple A7](/wiki/Apple_A7) | | [Apple A8](/wiki/Apple_A8) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**Motion coprocessor**](/wiki/Apple_motion_coprocessors) | [Template:N/a](/wiki/Template:N/a) | [Apple M7](/wiki/Apple_M7) | | [Apple M8](/wiki/Apple_M8) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**CPU**](/wiki/Central_processing_unit) | 1 GHz [dual-core](/wiki/Multi-core_processor) [ARM Cortex-A9](/wiki/ARM_Cortex-A9) | 1.3 GHz [dual-core](/wiki/Multi-core_processor) Apple Cyclone | | 1.5 GHz [dual-core](/wiki/Multi-core_processor) Apple Typhoon[[130]](#cite_note-130) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**GPU**](/wiki/Graphics_processing_unit) | [Dual-core](/wiki/Multi-core_processor) [PowerVR](/wiki/PowerVR) SGX543MP2 | Quad-core PowerVR [G6430](/wiki/PowerVR#Series_6_(Rogue))[[110]](#cite_note-110) | | [Quad-core](/wiki/Multi-core_processor) [PowerVR](/wiki/PowerVR) [GX6450](/wiki/PowerVR#Series_6XT)[[131]](#cite_note-131) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Memory** | 512 MB [DDR2](/wiki/DDR2_SDRAM) [RAM](/wiki/Random-access_memory) built into [Apple A5](/wiki/Apple_A5) package[[132]](#cite_note-132) | 1 GB [LPDDR3](/wiki/LPDDR3) [RAM](/wiki/Random-access_memory) | | 2 GB [LPDDR3](/wiki/LPDDR3) RAM[[133]](#cite_note-133) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**Storage**](/wiki/Data_storage_device) | 16, 32, or 64 [GB](/wiki/Gigabyte)[[52]](#cite_note-52) | 16, 32, 64, or 128 GB[[52]](#cite_note-52) | 16, 64, or 128 GB | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| [**Display**](/wiki/Display_device) | | [Template:Convert](/wiki/Template:Convert) [multi-touch](/wiki/Multi-touch) display with [LED](/wiki/Light-emitting_diode) backlighting and a fingerprint and scratch-resistant coating | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| 1024×768 [pixels](/wiki/Pixel) at 163 [ppi](/wiki/Pixel_density) | 2048×1536 [pixels](/wiki/Pixel) at 326 [ppi](/wiki/Pixel_density) ([Retina Display](/wiki/Retina_Display)) | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Camera** | **Back** | colspan=3|[1080p](/wiki/1080p) HD still and video camera 5 MP, 30fps and 5× digital zoom | [1080p](/wiki/1080p) HD still and video camera 8 MP, 30fps and 3× digital zoom |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Front** | colspan=4|1.2 MP still, [720p](/wiki/720p) video |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| [**Wireless**](/wiki/Wireless) | **Wi-Fi** | [Wi-Fi](/wiki/Wi-Fi) ([802.11a/b/g/n](/wiki/IEEE_802.11n-2009)), [Bluetooth 4.0](/wiki/Bluetooth#Bluetooth_v4.0) | | | [Wi-Fi](/wiki/Wi-Fi) ([802.11a/b/g/n/ac](/wiki/IEEE_802.11n-2009)), [Bluetooth 4.2](/wiki/Bluetooth#Bluetooth_v4.2) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Wi-Fi + Cellular** | In addition to above: 3G transitional [LTE](/wiki/3GPP_Long_Term_Evolution) on Cellular model | | | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| [**Geolocation**](/wiki/Geolocation) | **Wi-Fi** | Wi-Fi,[[52]](#cite_note-52) Apple location databases[[134]](#cite_note-134) | | Additionally: [iBeacon](/wiki/IBeacon) microlocation[[135]](#cite_note-135) | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **Wi-Fi + Cellular** | [Assisted GPS](/wiki/Assisted_GPS), [GLONASS](/wiki/GLONASS), Apple databases,<ref name=Techcrunch/> [Cellular network](/wiki/Radiolocation)[[52]](#cite_note-52) | | Additionally: [iBeacon](/wiki/IBeacon) microlocation[[135]](#cite_note-135) | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Environmental** [**sensors**](/wiki/Sensor) | colspan=3|[Accelerometer](/wiki/Accelerometer), [gyroscope](/wiki/Gyroscope), [ambient light sensor](/wiki/Photodetector), [magnetometer](/wiki/Magnetometer)[[52]](#cite_note-52) | Additionally: [barometer](/wiki/Barometer) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|**[**Battery**](/wiki/Battery_(electricity)) | [Template:Nowrap](/wiki/Template:Nowrap) [mA·h](/wiki/Ampere-hour))[[132]](#cite_note-132) | colspan=2|[Template:Nowrap](/wiki/Template:Nowrap) [Template:Nowrap](/wiki/Template:Nowrap) (6,471 mA·h)[[136]](#cite_note-136)[[137]](#cite_note-137) | [Template:Nowrap](/wiki/Template:Nowrap) [Template:Nowrap](/wiki/Template:Nowrap) (5,124 mA·h)[[133]](#cite_note-133) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Dimensions** | [Template:Convert](/wiki/Template:Convert) | colspan=2|[Template:Convert](/wiki/Template:Convert) | [Template:Convert](/wiki/Template:Convert) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Weight** | Wi-Fi model: [Template:Convert](/wiki/Template:Convert) Wi-Fi + Cellular model: [Template:Convert](/wiki/Template:Convert) | colspan=2|Wi-Fi model: [Template:Convert](/wiki/Template:Convert) Wi-Fi + Cellular model: [Template:Convert](/wiki/Template:Convert) | Wi-Fi model: [Template:Convert](/wiki/Template:Convert) Wi-Fi + Cellular model: [Template:Convert](/wiki/Template:Convert) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Mechanical keys** | Home, sleep, volume rocker, variable function switch (originally screen rotation lock, mute in iOS 4.2, either in 4.3 and later)[[52]](#cite_note-52) | | | Without variable function switch |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Connector** | colspan=4|Lightning |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Additional Features** | colspan=2 [Template:N/a](/wiki/Template:N/a) | colspan=2|[Touch ID](/wiki/Touch_ID) (finger-print scanner in home button) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| **colspan=2|Greenhouse gas emissions** | 95 kg CO2e[[138]](#cite_note-138) | colspan=2|170 kg CO2e[[128]](#cite_note-128)[[139]](#cite_note-139) | 120 kg CO2e[[140]](#cite_note-140) |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |

The iPad is assembled by [Foxconn](/wiki/Foxconn), which also manufactures Apple's iPod, iPhone and Mac Mini, in its largest plant in [Shenzhen](/wiki/Shenzhen), China.[[141]](#cite_note-141) In April 2011, Foxconn announced that it would be moving production of the iPad and other Apple products to Brazil where it could begin production before the end of 2011.[[142]](#cite_note-142) iSuppli estimated that each first-generation iPad 16 GB Wi-Fi version costs US$259.60 to manufacture, a total that excludes research, development, licensing, royalty and patent costs.[[143]](#cite_note-143) Apple does not disclose the makers of iPad components, but [teardown](/wiki/Product_teardown) reports and analysis from industry insiders indicate that various parts and their suppliers include:

* [Apple A4](/wiki/Apple_A4), A5 and A5X [SoC](/wiki/System_on_a_chip): [Samsung](/wiki/Samsung).[[52]](#cite_note-52)[[144]](#cite_note-144)[[145]](#cite_note-145)[[146]](#cite_note-146)\* NAND flash RAM chips: [Toshiba](/wiki/Toshiba) and [Samsung](/wiki/Samsung) (64 GB model).[[147]](#cite_note-147)[[148]](#cite_note-148)\* Touch-screen chips: [Broadcom](/wiki/Broadcom).[[147]](#cite_note-147)\* IPS Display (1st & 2nd generation): [LG Display](/wiki/LG_Display).[Template:Citation needed](/wiki/Template:Citation_needed)
* IPS Display (3rd generation): [Samsung](/wiki/Samsung).[[149]](#cite_note-149)\* Touch panels: [Wintek](/wiki/Wintek) (after TPK Touch Solutions was unable to fulfill its orders, delaying the iPad's release from late March to early April).[[150]](#cite_note-150)\* Case: Catcher Technologies.[[151]](#cite_note-151)\* Batteries: 60% are made in Taiwan by Simplo Technology, 40% by Dynapack International.[[61]](#cite_note-61)[[151]](#cite_note-151)\*Accelerometer: [STMicroelectronics](/wiki/STMicroelectronics).[[152]](#cite_note-152)

### iPad Pro series[[edit](/index.php?title=(none)&action=edit&section=18)]

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| **Model** | | [**iPad Pro**](/wiki/IPad_Pro) | |
| **Screen Size** | | **12.9-inch** | **9.7-inch** |
| **Image** | | [90px](/wiki/File:IPad_Pro_Mockup.png) | [70px](/wiki/File:IPad_Pro_Mockup.png) |
| **Initial** [**operating system**](/wiki/Operating_system) | | [iOS 9.1](/wiki/IOS_9) | [iOS 9.3](/wiki/IOS_9) |
| **Highest supported operating system** | | [iOS 9.3](/wiki/IOS_9).1 | |
| **Model Number**[**[103]**](#cite_note-103) | | A1584 (Wi-Fi) A1652 (Wi-Fi + Cellular) | A1673 (Wi-Fi)  A1674 or A1675 (Wi-Fi + Cellular) |
| **Announcement date** | | September 9, 2015 | March 21, 2016 |
| **Release date** | | November 11, 2015 | March 31, 2016 |
| **Discontinued** | | In production | |
| **Launch price** | | [Wi-Fi](/wiki/Wi-Fi) models: 32 GB [US$](/wiki/US$)799, 128 GB [US$](/wiki/US$)949, 256 GB [US$](/wiki/US$)1099 [Wi-Fi](/wiki/Wi-Fi) + [Cellular](/wiki/Cellular_network) models: 128 GB [US$](/wiki/US$)1079, 256 GB [US$](/wiki/US$)1229 | [Wi-Fi](/wiki/Wi-Fi) models: 32 GB [US$](/wiki/US$)599, 128 GB [US$](/wiki/US$)749, 256 GB [US$](/wiki/US$)899 [Wi-Fi](/wiki/Wi-Fi) + [Cellular](/wiki/Cellular_network) models: 32 GB [US$](/wiki/US$)729, 128 GB [US$](/wiki/US$)879, 256 GB [US$](/wiki/US$)1029 |
| **colspan=2|**[**SoC**](/wiki/System_on_a_chip) | [Apple A9X](/wiki/Apple_A9X) | |  |
| **colspan=2|**[**Motion coprocessor**](/wiki/Apple_motion_coprocessors) | [Apple M9](/wiki/Apple_M9) | |  |
| **colspan=2|**[**CPU**](/wiki/Central_processing_unit) | 2.26 GHz [dual-core](/wiki/Multi-core_processor) Apple Twister[[153]](#cite_note-153) | |  |
| **colspan=2|**[**GPU**](/wiki/Graphics_processing_unit) | 12-core [PowerVR Series 7XT](/wiki/PowerVR#Series_7XT)[[154]](#cite_note-154) | |  |
| **colspan=2|**[**Memory**](/wiki/Random-access_memory) | 4 GB [LPDDR4](/wiki/LPDDR4) [RAM](/wiki/Random-access_memory)[[153]](#cite_note-153) | 2 GB [LPDDR4](/wiki/LPDDR4) [RAM](/wiki/Random-access_memory) |  |
| **colspan=2|**[**Storage**](/wiki/Data_storage_device) | 32, 128 or 256 [GB](/wiki/Gigabyte) | |  |
| [**Display**](/wiki/Display_device) | | [Template:Convert](/wiki/Template:Convert) [diagonal] [multi-touch](/wiki/Multi-touch) display with [LED](/wiki/Light-emitting_diode) backlighting and an [oleophobic](/wiki/Lipophobicity), fingerprint and [scratch-resistant coating](/wiki/Anti-scratch_coating), [Antireflective coating](/wiki/Anti-reflective_coating) | [Template:Convert](/wiki/Template:Convert) [diagonal] [multi-touch](/wiki/Multi-touch) display with [LED backlighting](/wiki/LED-backlit_LCD_display) and an [oleophobic](/wiki/Lipophobicity) and [scratch-resistant coating](/wiki/Scratch-resistant_coating), [Wide color](/wiki/Wide_Color_Gamut) display, True Tone display, [Fully laminated](/wiki/Laminated_glass) display, [Antireflective coating](/wiki/Anti-reflective_coating) |
| 2732-by-2048 [pixel](/wiki/Pixel) resolution 264 [ppi](/wiki/Pixel_density) ([Retina Display](/wiki/Retina_Display)) | 2048-by-1536 [pixel](/wiki/Pixel) resolution at 264 [ppi](/wiki/Pixel_density) ([Retina Display](/wiki/Retina_Display)) |
| **Camera** | [**iSight**](/wiki/ISight) | 8 [MP](/wiki/Megapixels), ƒ/2.4 [aperture](/wiki/Aperture), [HDR](/wiki/High-dynamic-range_imaging) for photos, [Autofocus](/wiki/Autofocus), five-element lens, [Hybrid IR filter](/wiki/Infrared_cut-off_filter), [Backside illumination](/wiki/Back-illuminated_sensor), Face Detection, [Exposure control](/wiki/Exposure_(photography)),[Panorama](/wiki/Panorama) (up to 43 [MP](/wiki/Megapixels)), [Burst mode](/wiki/Burst_mode_(photography)), Tap to focus, Photo [geotagging](/wiki/Geotagged_photograph), [Timer mode](/wiki/Self_timer), Video Recording, [1080p](/wiki/1080p) video recording (30 [fps](/wiki/Frame_rate)), [Slo-mo](/wiki/Slo-Mo-Tion) video support for [720p](/wiki/720p) at 120 fps, [Time-lapse](/wiki/Time-lapse_photography) video, [Video image stabilization](/wiki/Image_stabilization), 3× [digital zoom](/wiki/Digital_zoom), [Video geotagging](/wiki/Geotagging) | 12 [MP](/wiki/Megapixels), ƒ/2.2 [aperture](/wiki/Aperture), Auto HDR for photos, five-element lens, [Hybrid IR filter](/wiki/Infrared_cut-off_filter), [Backside illumination](/wiki/Back-illuminated_sensor), [Autofocus](/wiki/Autofocus) with Focus Pixels, Improved [face detection](/wiki/Face_detection), [Exposure control](/wiki/Exposure_(photography)), [Panorama](/wiki/Panorama) (up to 63 [MP](/wiki/Megapixels)), [Burst mode](/wiki/Burst_mode_(photography)), Tap to focus, Photo [geotagging](/wiki/Geotagged_photograph), [Timer mode](/wiki/Self_timer), Video Recording, [Cinematic video stabilization](/wiki/Video_stabilization), [4K](/wiki/4K_resolution) video recording (30 [fps](/wiki/Frame_rate)),[1080p](/wiki/1080p) HD video recording at 30 fps or 60 fps, [Slo-mo](/wiki/Slo-Mo-Tion) video support for [1080p](/wiki/1080p) at 120 fps and [720p](/wiki/720p) at 240 fps, [Time-lapse](/wiki/Time-lapse_photography) video, 3× [digital zoom](/wiki/Digital_zoom), Live Photos, True Tone [LED](/wiki/Light-emitting_diode) [flash](/wiki/LED_flash), [Sapphire crystal](/wiki/Sapphire_Crystal) lens cover, Improved local tone mapping, Improved [noise reduction](/wiki/Noise_reduction), [Video geotagging](/wiki/Geotagging) |
| [**FaceTime**](/wiki/FaceTime) | 1.2 MP, ƒ/2.2 [aperture](/wiki/Aperture), [720p](/wiki/720p) HD video recording, Auto [HDR](/wiki/High-dynamic-range_imaging) for photos and videos, [Backside illumination](/wiki/Back-illuminated_sensor), [Exposure control](/wiki/Exposure_(photography)), [Burst mode](/wiki/Burst_mode_(photography)), [Timer mode](/wiki/Self_timer) and [Face Detection](/wiki/Face_detection) | 5 MP, ƒ/2.2 [aperture](/wiki/Aperture), [720p](/wiki/720p) HD video recording, Retina Flash, Auto [HDR](/wiki/High-dynamic-range_imaging) for photos and videos, [Backside illumination](/wiki/Back-illuminated_sensor), [Exposure control](/wiki/Exposure_(photography)), [Burst mode](/wiki/Burst_mode_(photography)), [Timer mode](/wiki/Self_timer) and [Face Detection](/wiki/Face_detection) |  |
| [**Wireless**](/wiki/Wireless) | [**Wi-Fi**](/wiki/Wi-Fi) | [Wi-Fi](/wiki/Wi-Fi) ([802.11a](/wiki/802.11a)/[b](/wiki/IEEE_802.11b-1999)/[g](/wiki/802.11g)/[n](/wiki/802.11n)/[ac](/wiki/802.11ac)); dual channel (2.4 GHz and 5 GHz); HT80 with [MIMO](/wiki/MIMO) [Bluetooth 4.2](/wiki/Bluetooth) technology | |  |
| [**Wi-Fi**](/wiki/Wi-Fi) **+** [**Cellular**](/wiki/Cellular_network) | Above plus:  [UMTS](/wiki/UMTS_(telecommunication))/[HSPA](/wiki/Evolved_High_Speed_Packet_Access)/[HSPA+](/wiki/HSPA+)/[DC-HSDPA](/wiki/DC-HSDPA) (850, 900, 1700/2100, 1900, 2100 MHz); [GSM](/wiki/GSM)/[EDGE](/wiki/Enhanced_Data_Rates_for_GSM_Evolution) (850, 900, 1800, 1900 MHz), [CDMA](/wiki/Code_division_multiple_access) [EV-DO](/wiki/Evolution-Data_Optimized) Rev. A and Rev. B (800, 1900 MHz), [LTE](/wiki/LTE_(telecommunication)) (Bands 1, 2, 3, 4, 5, 7, 8, 13, 17, 18, 19, 20, 25, 26, 28, 29, 38, 39, 40, 41), Data only, Includes [Apple SIM](/wiki/Apple_SIM) ([U.S.](/wiki/United_States), [UK](/wiki/United_Kingdom), and [Germany](/wiki/Germany) only) | Above plus:  [UMTS](/wiki/UMTS_(telecommunication))/[HSPA](/wiki/Evolved_High_Speed_Packet_Access)/[HSPA+](/wiki/Evolved_High_Speed_Packet_Access)/[DC-HSDPA](/wiki/DC-HSDPA) (850, 900, 1700/2100, 1900, 2100 MHz); [GSM](/wiki/GSM)/[EDGE](/wiki/Enhanced_Data_Rates_for_GSM_Evolution) (850, 900, 1800, 1900 MHz), [CDMA](/wiki/Code_division_multiple_access) [EV-DO](/wiki/Evolution-Data_Optimized) Rev. A and Rev. B (800, 1900 MHz), [LTE Advanced](/wiki/LTE_Advanced) (Bands 1, 2, 3, 4, 5, 7, 8, 12, 13, 17, 18, 19, 20, 25, 26, 27, 28, 29, 30, 38, 39, 40, 41), Data only, [Embedded Apple SIM](/wiki/Embedded_Apple_SIM) |  |
| [**Geolocation**](/wiki/Geolocation) | **Wi-Fi** | [Wi-Fi](/wiki/Wi-Fi), Apple location databases, [iBeacon](/wiki/IBeacon) microlocation | |  |
| **Wi-Fi + Cellular** | [Assisted GPS](/wiki/Assisted_GPS), [GLONASS](/wiki/GLONASS), Apple databases, [Cellular network](/wiki/Radiolocation), [iBeacon](/wiki/IBeacon) microlocation | |  |
| **colspan=2|Environmental** [**sensors**](/wiki/Sensor) | colspan=3|[Accelerometer](/wiki/Accelerometer), [gyroscope](/wiki/Gyroscope), [ambient light sensor](/wiki/Photodetector), [magnetometer](/wiki/Magnetometer), [barometer](/wiki/Barometer) |  |  |  |
| **colspan=2|**[**Battery**](/wiki/Battery_(electricity)) | [Template:NowrapmA](/wiki/Template:Nowrap)·h) rechargeable lithium‐polymer battery[[155]](#cite_note-155) | 3.82 [V](/wiki/Volt) 27.91 W·h (7306mA·h) rechargeable lithium‐polymer battery[[156]](#cite_note-156) |  |  |
| **colspan=2|Dimensions** | 305.7 mm (12.04 in) *(h)* 220.6 mm (8.69 in) *(w)*  6.9 mm (0.27 in) *(d)* | 240 mm (9.4 in) *(h)*  169.5 mm (6.67 in) *(w)*  6.1 mm (0.24 in) *(d)* |  |  |
| **colspan=2|Weight** | Wi-Fi model: [Template:Convert](/wiki/Template:Convert) Wi-Fi + Cellular model: [Template:Convert](/wiki/Template:Convert) | Wi-Fi: 437 g (0.963 lb)  Wi-Fi + Cellular: 444 g (0.979 lb) |  |  |
| **colspan=2|Mechanical keys** | Home, sleep, volume rocker | |  |  |
| **colspan=2|Connector** | colspan=4|[Lightning Connector](/wiki/Lightning_(connector)), Apple [Smart Connector](/wiki/Smart_Connector) |  |  |  |
| **colspan=2|Additional Features** | Four speaker audio | |  |  |
| **colspan=2|Greenhouse gas emissions** | 240 kg CO2e[[157]](#cite_note-157) | 210 kg CO2e[[158]](#cite_note-158) |  |  |
|  |  |  |  |  |

## Restrictions[[edit](/index.php?title=(none)&action=edit&section=19)]

### Digital rights management[[edit](/index.php?title=(none)&action=edit&section=20)]

[Template:Details](/wiki/Template:Details) The iPad does not employ [digital rights management](/wiki/Digital_rights_management) (DRM), but the OS prevents users from copying or transferring certain content outside of Apple's platform without authorization, such as TV shows, movies, and apps. Also, the iPad's development model requires anyone creating an app for the iPad to sign a [non-disclosure agreement](/wiki/Non-disclosure_agreement) and pay for a developer subscription. Critics argue Apple's centralized app approval process and control of the platform itself could stifle software innovation. Of particular concern to [digital rights](/wiki/Digital_rights) advocates is Apple's ability to remotely disable or delete apps on any iPad at any time.[[159]](#cite_note-159)[[160]](#cite_note-160)[[161]](#cite_note-161) Digital rights advocates, including the [Free Software Foundation](/wiki/Free_Software_Foundation),[[162]](#cite_note-162) [Electronic Frontier Foundation](/wiki/Electronic_Frontier_Foundation),[[161]](#cite_note-161) and computer engineer and activist [Brewster Kahle](/wiki/Brewster_Kahle),[Template:Citation needed](/wiki/Template:Citation_needed) have criticized the iPad for its digital rights restrictions. In April 2010, Paul Sweeting, an analyst with [GigaOM](/wiki/GigaOM), was quoted by *National Public Radio* as saying, "With the iPad, you have the anti-Internet in your hands. ... It offers [the major media companies] the opportunity to essentially re-create the old business model, wherein they are pushing content to you on their terms rather than you going out and finding content, or a search engine discovering content for you." But Sweeting also thought that the limitations imposed by Apple impart the feeling of a safe neighborhood, saying, "Apple is offering you a gated community where there's a guard at the gate, and there's probably maid service, too." [Laura Sydell](/wiki/Laura_Sydell), the article's author, concludes, "As more consumers have fears about security on the Internet, viruses and malware, they may be happy to opt for Apple's gated community."[[163]](#cite_note-163) The Russian government has switched from iPads to Android devices over security concerns.[[164]](#cite_note-164)[Template:Clear](/wiki/Template:Clear)

### Jailbreaking[[edit](/index.php?title=(none)&action=edit&section=21)]

[Template:Details](/wiki/Template:Details) Like certain iOS devices, the iPad can be "jailbroken", depending on which version of [iOS](/wiki/IOS) it is running, thus allowing applications and programs that are not authorized by Apple to run on the device.[[165]](#cite_note-165)[[166]](#cite_note-166) Once it is jailbroken, users are able to download many applications previously unavailable through the App Store via unofficial installers such as [Cydia](/wiki/Cydia), as well as illegally [pirated](/wiki/Copyright_infringement_of_software) applications.[[166]](#cite_note-166) Apple claims jailbreaking "can" void the factory warranty on the device in the United States even though jailbreaking is legal.[[166]](#cite_note-166)[[167]](#cite_note-167) [David Pogue](/wiki/David_Pogue) of *The New York Times* wrote a "dual" review, one part for technology-minded people, and the other part for non-technology-minded people. In the former section, he notes that a laptop offers more features for a cheaper price than the iPad. In his review for the latter audience, however, he claims that if his readers like the concept of the device and can understand what its intended uses are, then they will enjoy using the device.<ref name=nyt-review>[Template:Cite news](/wiki/Template:Cite_news)</ref> [PC Magazine's](/wiki/PC_Magazine) Tim Gideon wrote, "you have yourself a winner" that "will undoubtedly be a driving force in shaping the emerging tablet landscape."[[186]](#cite_note-186) Michael Arrington of TechCrunch said, "the iPad beats even my most optimistic expectations. This is a new category of device. But it also will replace laptops for many people."[[187]](#cite_note-187) [PC World](/wiki/PC_World) criticized the iPad's [file sharing](/wiki/File_sharing) and printing abilities,[[188]](#cite_note-188) and ArsTechnica said sharing files with a computer is "one of our least favorite parts of the iPad experience."[[189]](#cite_note-189) The media also praised the quantity of applications, as well as the bookstore and other media applications.[[190]](#cite_note-190)[[191]](#cite_note-191) In contrast they criticized the iPad for being a closed system and mentioned that the iPad faces competition from [Android](/wiki/Android_(operating_system))-based tablets,[[177]](#cite_note-177) that outsold iPads in 2013, surpassing iPads in the second quarter of 2013,[[192]](#cite_note-192) and have overtaken iPad's installed base,[[193]](#cite_note-193) and has lost majority of web browsing to Android, by [StatCounter](/wiki/StatCounter) estimates, in [South America](/wiki/South_America), Africa, most of Asia[Template:Snd](/wiki/Template:Snd) many large countries there and in Eastern Europe.[[194]](#cite_note-194)