Google Chrome OS

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| **Google Chrome OS** |
| **Google Chrome Icon** |
| Chrome OS screenshot sdres 0001 App-Menu.pngNovember 2009 screenshot of [Chromium OS](http://en.wikipedia.org/wiki/Chromium_OS), the development version of Chrome OS. |
| [**Company**](http://en.wikipedia.org/wiki/Software_industry)**/**[**developer**](http://en.wikipedia.org/wiki/Software_developer) | [Google Inc.](http://en.wikipedia.org/wiki/Google) |
| **Programmed in** | [C](http://en.wikipedia.org/wiki/C_%28programming_language%29), [C++](http://en.wikipedia.org/wiki/C%2B%2B) |
| **OS family** | [Unix-like](http://en.wikipedia.org/wiki/Unix-like) |
| **Working state** | Source code released as [Chromium OS](http://en.wikipedia.org/wiki/Chromium_OS) |
| **Supported platforms** | [x86](http://en.wikipedia.org/wiki/X86), [ARM](http://en.wikipedia.org/wiki/ARM_architecture) |
| [**Kernel**](http://en.wikipedia.org/wiki/Kernel_%28computing%29)**type** | [Monolithic](http://en.wikipedia.org/wiki/Monolithic_kernel) ([Linux](http://en.wikipedia.org/wiki/Linux_kernel)) |
| **Default**[**user interface**](http://en.wikipedia.org/wiki/User_interface) | [Graphical](http://en.wikipedia.org/wiki/Graphical_user_interface) |
| [**License**](http://en.wikipedia.org/wiki/Software_license) | [BSD license](http://en.wikipedia.org/wiki/BSD_license) (for Chromium OS - Chrome OS has not been released yet under any license)[[1]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Licencing-0)[[2]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-ChromeOSSource-1) |

**Google Chrome OS** is an upcoming [Linux](http://en.wikipedia.org/wiki/Linux)-based, [open source](http://en.wikipedia.org/wiki/Open_source)[[3]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Google_11-09-2) [operating system](http://en.wikipedia.org/wiki/Operating_system) designed by [Google](http://en.wikipedia.org/wiki/Google) to work exclusively with [web applications](http://en.wikipedia.org/wiki/Web_application).[[4]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-PC_World-3) Announced on July 7, 2009, Chrome OS is set to have a publicly available stable release during the second half of 2010.[[5]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Times-4)

Chrome OS will not be available as a download to run and install. Instead, the operating system will only ship on specific hardware from Google's manufacturing partners.[[6]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Tweney.2C_Wired-5) The user interface takes a [minimalist approach](http://en.wikipedia.org/wiki/Minimalism_%28computing%29), resembling that of the [Chrome](http://en.wikipedia.org/wiki/Google_Chrome) [web browser](http://en.wikipedia.org/wiki/Web_browser). Because the only application on the device will be a browser incorporating a media player,[[7]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Ars_Technica:_Google_Talks-6)[[3]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Google_11-09-2)Google Chrome OS is aimed at users who spend most of their time on the [Internet](http://en.wikipedia.org/wiki/Internet).[[8]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Bloomberg-7)[[9]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-NY_Times_Hansell-8)[[10]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-9)

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* [8 External links](http://en.wikipedia.org/wiki/Google_Chrome_OS#External_links)
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[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=1)]History

Google developers began coding the operating system in 2009, inspired by the growing popularity and lower power consumption of netbooks and the focus of these small [laptops](http://en.wikipedia.org/wiki/Laptops) on Internet access. To ascertain marketing requirements for an operating system focused on netbook Web transactions, the company did not do the usual demographic research generally associated with a large software development project. Instead, engineers have relied on more informal metrics, including monitoring the usage patterns of some 200 Chrome OS machines used by Google employees. Developers also noted their own usage patterns. Matthew Papakipos, engineering director for the Chrome OS project, put three machines in his house and found himself logging in for brief sessions: to make a single search query or send a short email.[[7]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Ars_Technica:_Google_Talks-6) (In mid-2010, Papakipos left Google and went to [Facebook](http://en.wikipedia.org/wiki/Facebook).[[11]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-10))

On November 19, 2009, Google released Chrome OS's [source code](http://en.wikipedia.org/wiki/Source_code) as the [Chromium OS](http://en.wikipedia.org/wiki/Chromium_OS) project.[[3]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Google_11-09-2) As with other open source projects, developers are modifying code from Chromium OS and building their own versions, whereas Google Chrome OS code will only be supported by Google and its partners, and will only run on hardware designed for the purpose. Unlike Chromium OS, Chrome OS will be automatically updated to the latest version.[[12]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Chromium_Developer_FAQ-11) [InformationWeek](http://en.wikipedia.org/wiki/InformationWeek) reviewer Serdar Yegulalp wrote that Chrome OS will be a product, developed to "a level of polish and a degree of integration with its host hardware that Chromium OS does not have by default," whereas Chromium OS is a project, "a common baseline from which the finished work is derived" as well as a pool for derivative works. The product and project will be developed in parallel and borrow from each other.[[13]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Yegulalp-12)

In March 2010 Google indicated that consideration is being given to developing two versions of the operating system, a consumer version and an enterprise version.[[14]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Messmer06Mar10-13)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=2)]Work-in-progress previews

At a November 19, 2009 news conference, Sundar Pichai, the Google vice president overseeing Chrome, demonstrated an early version of the operating system, which included a desktop that closely resembled the Chrome browser. However, beside the regular browser tabs, the interface also had application tabs, which take less space and can be pinned for easier access. At the conference, the operating system [booted](http://en.wikipedia.org/wiki/Booting) up in seven seconds, a time Google said it would work to reduce.[[15]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-NYT-11.2F19-14) In a video posted the previous day on YouTube, Google software engineer Martin Bligh demonstrated a bootup time of four seconds.[[16]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Bligh-15)

Because Chrome OS and Chromium OS will share the same code base[[12]](http://en.wikipedia.org/wiki/Google_Chrome_OS%22%20%5Cl%20%22cite_note-Chromium_Developer_FAQ-11)[[13]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Yegulalp-12), early versions of Chromium OS give a preview of Chrome OS. The Chromium OS [alpha release](http://en.wikipedia.org/wiki/Alpha_release) includes an applications page, launched by a button in the upper-left corner of the screen. The page links to Google web applications, including [Gmail](http://en.wikipedia.org/wiki/Gmail), [Google Apps](http://en.wikipedia.org/wiki/Google_Apps), and [YouTube](http://en.wikipedia.org/wiki/YouTube), as well as other applications, including [Yahoo! Mail](http://en.wikipedia.org/wiki/Yahoo%21_Mail), [Pandora](http://en.wikipedia.org/wiki/Pandora_%28music_service%29), [Hulu](http://en.wikipedia.org/wiki/Hulu), [Facebook](http://en.wikipedia.org/wiki/Facebook), and [Twitter](http://en.wikipedia.org/wiki/Twitter). Chromium currently also provides a calculator, clock, battery indicator, and network status indicator. The function key F12 brings up a multi-window view, with the option to open additional browser windows and switch between them. The F8 key toggles a keyboard overlay that shows the function of all the shortcut keys, including task and memory managers comparable to those found on the Chrome browser, and a command-line interface that accepts common Linux commands.[[12]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Chromium_Developer_FAQ-11)[[13]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Yegulalp-12)[[17]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-eWeek_first-look_review-16)

On January 25, 2010, Google posted notes, images and a video of a conceptual design showing how a Chrome OS user interface might look on a [tablet PC](http://en.wikipedia.org/wiki/Tablet_PC) with a 5-10 inch screen. The design would include the same basic layout as on netbooks, but with a touch interface; an onscreen [qwerty](http://en.wikipedia.org/wiki/Qwerty) keyboard in different layouts; large, square icons placed above the tabs; and panels placed along the bottom edge that could be opened with an upward dragging motion.[[18]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-17)[[19]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Google_tablet_concept-18) The posting was made two days before [Apple](http://en.wikipedia.org/wiki/Apple_Computer) announced the [iPad](http://en.wikipedia.org/wiki/IPad) tablet.[[20]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-CNNMoney:_Google_vs._Apple-19)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=3)]Design goals and direction

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=4)]**User interface**

Design goals for Google Chrome OS's user interface include using minimal screen space by combining applications and standard Web pages into a single tab strip, rather than separating the two. Designers are considering a reduced window management scheme that would operate only in full-screen mode. Secondary tasks would be handled with "panels": floating windows that dock to the bottom of the screen for tasks like chat and music players. Split screens are also under consideration for viewing two pieces of content side-by-side. Google Chrome OS will follow the Chrome browser's practice of leveraging [HTML5](http://en.wikipedia.org/wiki/HTML5)'s offline modes, background processing, and notifications. Designers propose using search and pinned tabs as a way to quickly locate and access applications.[[21]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-UX-20)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=5)]**Architecture**

In preliminary design documents for the Chromium OS open source project, Google describes a three-tier architecture: firmware, browser and window manager, and system-level software and [userland](http://en.wikipedia.org/wiki/User_space) services.[[22]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Security_overview-21)

* The firmware contributes to fast boot time by not probing for hardware, such as floppy disk drives, that are no longer common on computers, especially netbooks. The firmware also contributes to security by verifying each step in the boot process and incorporating system recovery.[[22]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Security_overview-21)
* System-level software includes the Linux kernel that has been patched to improve boot performance. Userland software has been trimmed to essentials, with management by [Upstart](http://en.wikipedia.org/wiki/Upstart), which can launch services in parallel, re-spawn crashed jobs, and defer services in the interest of faster booting.[[22]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Security_overview-21)
* The window manager handles user interaction with multiple client windows much like other [X window](http://en.wikipedia.org/wiki/X_window) managers.[[22]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Security_overview-21)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=6)]**Remote application access**

In June 2010, Google software engineer Gary Kačmarčík wrote that Chrome OS will access remote applications through a technology unofficially called "Chromoting", which would resemble Microsoft's [Remote Desktop Connection](http://en.wikipedia.org/wiki/Remote_Desktop_Connection).[[23]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-22) The name has since been changed to "remoting," and is "probably closer to running an application via Terminal Services or by first connecting to a host machine by using RDP or VNC."[[24]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-23)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=7)]**Hardware support**

Google Chrome OS is initially intended for secondary devices like netbooks, not a user's primary PC,[[15]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-NYT-11.2F19-14) and will run on hardware incorporating an [x86](http://en.wikipedia.org/wiki/X86) or [ARM](http://en.wikipedia.org/wiki/ARM_architecture)-based processor.[[8]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Bloomberg-7) While Chrome OS will support [hard disk drives](http://en.wikipedia.org/wiki/Hard_disk_drive), Google has requested that its hardware partners use [solid-state drives](http://en.wikipedia.org/wiki/Solid-state_drives) due to their higher performance and reliability[[12]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Chromium_Developer_FAQ-11), as well as the lower capacity requirements inherent in an operating system that accesses applications and most user data on remote servers. Google Chrome OS consumes one-sixtieth as much drive space as [Windows 7](http://en.wikipedia.org/wiki/Windows_7).[[25]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-24)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=8)]**Integrated media player**

Google will integrate a [media player](http://en.wikipedia.org/wiki/Media_player_%28application_software%29) into both Chrome OS and the Chrome browser, enabling users to play back MP3s, view JPEGs, and handle other multimedia files while offline.[[26]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-25)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=9)]**Printing**

Google plans to create a service called Google Cloud Print, which will help any application on any device to print on any printer. This method of printing does not require any drivers and therefore will be suitable for printing from Google Chrome OS. Mike Jazayeri, Google group product manager, wrote that the service was prompted by a paradox inherent in an operating system designed expressly for cloud computing. While the cloud provides virtually any connected device with information access, the task of "developing and maintaining print subsystems for every combination of hardware and operating system-- from desktops to netbooks to mobile devices -- simply isn't feasible."[[27]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Google_Cloud_Print-26)[[28]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-27) The service would entail installing a piece of software, called a proxy, as part of Chrome OS. The proxy would register the printer with the service, manage the print jobs and give status alerts for each job.[[29]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-28)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=10)]**Link handling**

One unresolved design problem related to both Chrome OS and the Chrome browser is the desired behavior for how Web applications handle specific link types. For example, if a JPEG is opened in Chrome or on a Chrome OS device, should a specific Web application be automatically opened to view it, and if so, which one? Similarly, if a user clicks on a .doc file, which website should open: [Office Live](http://en.wikipedia.org/wiki/Office_Live), Gview, or a previewing utility? Project director Matthew Papakipos noted that Windows developers have faced the same fundamental problem: "[Quicktime](http://en.wikipedia.org/wiki/Quicktime) is fighting with [Windows Media Player](http://en.wikipedia.org/wiki/Windows_Media_Player), which is fighting with Chrome". As the number of Web applications increases, the same problem arises.[[7]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Ars_Technica:_Google_Talks-6)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=11)]**Security**

In March 2010, Google software security engineer Will Drewry discussed Chrome OS security. Drewry described Chrome OS as a "hardened" operating system featuring auto-updating and [sandbox](http://en.wikipedia.org/wiki/Sandbox_%28computer_security%29) features that will reduce malware exposure. He said that Chrome OS netbooks will be shipped with [Trusted Platform Module](http://en.wikipedia.org/wiki/Trusted_Platform_Module), and include both a "trusted bootpath" and a physical switch under the battery compartment that actuates a developer mode. That mode drops some specialized security functions but increases developer flexibility. Drewry also emphasized that the open source nature of the operating system will contribute greatly to its security by allowing constant developer feedback.[[14]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Messmer06Mar10-13)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=12)]**Flash integration**

As with the Chrome browser, Google will integrate [Adobe Flash](http://en.wikipedia.org/wiki/Adobe_Flash) into Chrome OS.[[30]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-TechCrunch-Chrome-29)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=13)]Compatible hardware

Companies developing hardware for the operating system include [Acer](http://en.wikipedia.org/wiki/Acer_Inc.), [Adobe](http://en.wikipedia.org/wiki/Adobe_Systems), [Asus](http://en.wikipedia.org/wiki/Asustek), [Freescale](http://en.wikipedia.org/wiki/Freescale), [Hewlett-Packard](http://en.wikipedia.org/wiki/Hewlett-Packard), [Lenovo](http://en.wikipedia.org/wiki/Lenovo), [Qualcomm](http://en.wikipedia.org/wiki/Qualcomm), [Texas Instruments](http://en.wikipedia.org/wiki/Texas_Instruments), [Toshiba](http://en.wikipedia.org/wiki/Toshiba)[[31]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-30), [Intel](http://en.wikipedia.org/wiki/Intel)[[32]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-31), [Samsung](http://en.wikipedia.org/wiki/Samsung) Australia[[33]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Channel_News_Aust-32), and [Dell](http://en.wikipedia.org/wiki/Dell_Inc.)[[34]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-33).

In July 2010, Google CEO [Eric Schmidt](http://en.wikipedia.org/wiki/Eric_Schmidt) said a Google-branded Google OS netbook was unlikely, despite Google's having previously negotiated with a couple of hardware manufacturers to produce it, and despite an earlier Google-branded device, the [Nexus One](http://en.wikipedia.org/wiki/Nexus_One) Android phone. "Let's see how well those partners do first. My guess is we won't need to. The PC industry is different from the phone industry. The PC industry is used to working with Microsoft, whereas the mobile industry was not used to working with software".[[35]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-TelegraphSchmidt-34)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=14)]**Hardware pricing**

Schmidt has acknowledged that Chrome OS will be compatible with a smaller library of applications than conventional operating systems, like Windows, which support both Web- and client-based applications. That limitation, coupled with Chrome OS having no licensing fee, has caused speculation as to the retail price of Chrome OS devices.[[36]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-TechRadar20Apr10-35)

In April 2010, Schmidt indicated that he expected prices for Chrome OS netbooks to range from US$300 to $400, and thus be similar in cost to comparable devices that ship with [closed source](http://en.wikipedia.org/wiki/Closed_source) operating systems. He also confirmed that Google will supply the operating system for free, but it will be up to hardware manufacturers and retailers to set their own prices for the devices. When Schmidt was asked about the likelihood of phone companies bundling low cost or free netbooks with service contracts he responded: "If a phone company chose to do that then that would be great."[[36]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-TechRadar20Apr10-35)

Other observers had earlier forecast different pricing models. In November 2009, Glyn Moody, writing for [*Linux Journal*](http://en.wikipedia.org/wiki/Linux_Journal), predicted that Google's market model for the Chrome OS will be to give the software and the netbook hardware that it will run on away for free, as a means of expanding its advertising-based model. He said: "The unexpected success of netbooks over the last two years shows there is a market for this new kind of computing; giving away systems for free would take it to the next level. Then, gradually, that instant-on, secure, secondary netbook might become the one you spend most time on, and Google's ad revenues would climb even higher...."[[37]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-LinuxJournal24Nov09-36)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=15)]Market implications

When Google announced the [Chrome browser](http://en.wikipedia.org/wiki/Google_Chrome) in September 2008, it was viewed[[38]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-37) as a continuation of the battle between [Google](http://en.wikipedia.org/wiki/Google) and [Microsoft](http://en.wikipedia.org/wiki/Microsoft) ("the two giants of the [digital revolution](http://en.wikipedia.org/wiki/Digital_revolution)").[[39]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-guardian100709-38) As of December 2009, Microsoft dominates the[usage share of desktop operating systems](http://en.wikipedia.org/wiki/Usage_share_of_desktop_operating_systems)[[39]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-guardian100709-38) and the software market in [word processing](http://en.wikipedia.org/wiki/Word_processing) and [spreadsheet](http://en.wikipedia.org/wiki/Spreadsheet) applications. The operating system dominance may be challenged directly by Google Chrome OS, and the application dominance indirectly through a shift to [cloud computing](http://en.wikipedia.org/wiki/Cloud_computing).[[39]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-guardian100709-38) According to an analysis by [*PC World*](http://en.wikipedia.org/wiki/PC_World_%28magazine%29),[[40]](http://en.wikipedia.org/wiki/Google_Chrome_OS%22%20%5Cl%20%22cite_note-pcworld-39) Google Chrome OS represents the next step in this battle. But Chrome OS engineering director Matthew Papakipos has noted that the two operating systems will not fully overlap in functionality. Users should be aware that Chrome OS hosted on a netbook is not intended as a substitute for [Microsoft Windows](http://en.wikipedia.org/wiki/Microsoft_Windows) running on a conventional laptop, which has the computational power to run a resource-intensive program like [Photoshop](http://en.wikipedia.org/wiki/Photoshop).[[7]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Ars_Technica:_Google_Talks-6)

Some critics have predicted the market failure of Chrome OS. Tony Bradley writing for [PC World](http://en.wikipedia.org/wiki/PC_World) in November 2009 said: "We can already do most, if not all, of what Chrome OS promises to deliver. Using a Windows 7 or Linux-based netbook, users can simply not install anything but a web browser and connect to the vast array of Google products and other web-based services and applications. Netbooks have been successful at capturing the low-end PC market, and they provide a web-centric computing experience today. I am not sure why we should get excited that a year from now we'll be able to do the same thing, but locked into doing it from the fourth-place web browser."[[41]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Bradley20Nov09-40)

By April 2010, reports were mixed regarding hardware manufacturers' interest in building Chrome OS devices. Kevin McLaughlin of *ChannelWeb* reported that "Chrome OS isn't on the radar of system builders to any great extent". Kent Tibbils, vice president of marketing at Intel whitebook partner ASI, said that the company's "salespeople aren't getting a lot of inquiries about Chrome OS from customers, and they haven't even heard of anyone asking for it". But Ryan Paul of [Ars Technica](http://en.wikipedia.org/wiki/Ars_Technica) reported that "Chrome OS is maturing and gaining the support of prominent component makers and device vendors" and noted that [Samsung](http://en.wikipedia.org/wiki/Samsung), [Nvidia](http://en.wikipedia.org/wiki/Nvidia), and [Qualcomm](http://en.wikipedia.org/wiki/Qualcomm) were all actively involved in Chrome software development.[[42]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-McLaughlin21Apr10A-41)[[43]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-Paul22Apr10-42)

[[edit](http://en.wikipedia.org/w/index.php?title=Google_Chrome_OS&action=edit&section=16)]Relationship to Android

The successive introduction of [Android](http://en.wikipedia.org/wiki/Android_%28operating_system%29) and the arrival of Google Chrome OS, both open source, client-based operating systems, have created some market confusion, especially with Android's growing success.[[44]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-zdnet-Admob-43) [Microsoft](http://en.wikipedia.org/wiki/Microsoft) CEO [Steve Ballmer](http://en.wikipedia.org/wiki/Steve_Ballmer) accused Google of not being able to make up its mind.[[45]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-44) Google has downplayed this conflict, suggesting that the two operating systems address different markets, mobile and personal computing, which remain distinct despite the growing convergence of the devices. Co-founder [Sergey Brin](http://en.wikipedia.org/wiki/Sergey_Brin) suggested that the two systems "will likely converge over time".[[46]](http://en.wikipedia.org/wiki/Google_Chrome_OS#cite_note-45)

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* [Official announcement](http://googleblog.blogspot.com/2009/07/introducing-google-chrome-os.html)
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