

Google Chrome OS

Google Chrome OS is an open source operating system designed by Google to work exclusively with web applications.[3] Announced on July 7, 2009, Chrome OS is set to have a publicly available stable release during the second half of 2010.[4] The operating system is based on Linux and targets specifically designed hardware.[5] The user interface takes a minimalist approach, resembling that of the Chrome web browser. Because the browser will be the only application residing on the device, Google Chrome OS is aimed at users who spend most of their computer time on the Internet.[6][7][8]

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, but with tabs for frequently used Web-based applications. The netbook running the operating system booted up in seven seconds, a time Google is working to improve.[9] On the same day, Google released Chrome OS's source code under open source licensing as Chromium OS.[10]

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's offline modes, background processing, and notifications. Designers propose using search and pinned tabs as a way to quickly locate and access applications.[1]

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 services.[12]

- * 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.[12]

- * 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, which can launch services in parallel, re-spawn crashed jobs, and defer services in the interest of faster booting.[12]

- * The window manager handles user interaction with multiple client windows much like other X window managers

Hardware

Google Chrome OS is initially intended for secondary devices like netbooks, not a user's primary PC,[9] and will run on hardware incorporating an x86 or ARM processor and a solid state drive.[6] Google favors solid state drives over hard disk drives because the former provide faster boot-up times and the latter's

higher capacity isn't essential for an operating system that accesses applications and most user data on remote servers. In addition, Google Chrome OS consumes 60 times less drive space than Windows 7.[13]

Companies developing hardware for the operating system include Hewlett-Packard, Acer, Adobe, Asus, Lenovo, Qualcomm, Texas Instruments, Freescale[14] and Intel.[15]

Market implications

When Google announced the Chrome browser in September 2008 it was viewed[16] as a continuation of the battle between Google and Microsoft ("the two giants of the digital revolution").[17] As of 2009[update], Microsoft dominates the usage share of desktop operating systems[17] and the software market in word processing, spreadsheet, and Web Browser applications. The operating system dominance may be challenged directly by Google Chrome OS, and the application dominance indirectly through a shift to cloud computing.[17] According to an analysis by PC World,[18] Google Chrome OS represents the next step in this battle.

Relationship to Android

The successive introduction of Android and Google Chrome OS, both open source, client-based operating systems, has created some market confusion, especially with Android's growing success. Microsoft CEO Steve Ballmer accused his competitor of not being able to make up its mind. [19]. 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 suggested that the two systems "will likely converge over time".[