Linux — Coming Soon to a Computer Near You

I purchased a Linux Android Nexus 7 tablet a few days ago and am playing with it now. First impressions? It’s far better than I expected: the Linux Kernel, the Android GUI, and the accompanying apps feel very solid. I’m particularly impressed with the speech recognition feature. It struggles occasionally understanding the names of some places in Korea, but most of the time it understands my speech quite well when dictating emails or when searching for things on google. It’s quite something to see the speech recognition in action: it feels futuristic, like a scene from “2001: A Space Odyssey” when the astronauts speak to HAL :D

![Nexus 7 running Linux Android](image)

In my living room, listening to music with my Nexus 7 running Linux Android (Linux version 3.1.10).

The rise of Linux on mobile devices reminds me of a conversation I had with fellow grad students at the University of Toronto Institute for Aerospace Studies in the late 1990s. I was a fervent supporter of Linux at the time (and still am!) and was convinced it was only a matter of time before it would prevail over other OSEs on supercomputers and on PCs. At that time, Windows 95 and 98 were prevalent on PCs while AIX [1], Solaris [3], Unicos [1] were prevalent on high-end workstations and supercomputers, and my fellow grad students had difficulties fathoming why supercomputers worth hundreds of millions of dollars would be running on an operating system that could be downloaded from the internet for free [1], and how the same OS used on supercomputers could also be used on desktops and mobile devices.

![Titan supercomputer](image)

Titan supercomputer [1] at the Oak Ridge National Laboratory [1]. Titan runs the Cray Linux Environment [1] and was the world’s fastest supercomputer as of November 2012.

IT SHOULDN’T BE SURPRISING if you’ve never heard of AIX, Solaris and Unicos: these UNIX compatible operating systems have since been replaced by another UNIX-compatible OS: Linux. Indeed, as of 2013, Linux is the OS on 476 of the world’s 500 fastest supercomputers, including the 10 fastest [1]. Linux is also making inroads on mobile devices: as of August 2013, 79% of smartphones sold are running Linux-Android [1], a rise of 10 percentage points from the previous year. There is now little doubt that Linux will maintain its dominant position on mobile devices much in the same way as DOS-Windows [1] was the OS of choice on IBM-compatible computers in the late 1980s and 1990s.

With Linux being widely deployed on mobile devices and supercomputers, it now remains to be seen how long it will take for it to supersede Windows on desktops. This may not be so far away in the future as many believe: as it is, I find Linux to be already an excellent choice for an OS on the desktop, as long as there is no absolute need for certain softwares that are not yet ported (such as MS Word, Excel, or autocad for instance). Further, Google is currently selling a Linux-powered Chromebook [1] that is now being used by 22% of schools in the U.S. [1] and there is a growing trend toward net-based applications that can be operated within a web-browser and are hence not OS-dependent (more on this below).

![Titan supercomputer](image)
I have been using Linux as my main OS for over 17 years already and have always felt the UNIX environment to be the best choice for academic work, especially when the research topic involves major code development. There is indeed a beauty in using the UNIX shell while programming in C, as both the C language and UNIX were created by the same persons, Dennis Ritchie and Ken Thompson. Perhaps for similar reasons, various code developers have strongly favored Linux on their workstation over the years, and eventually deployed it to various platforms.

Linux. Coming soon to all computing devices near you. Resistance is futile :-D

Chromebooks are a new type of laptops tailored for home computing. They run the Linux-ChromeOS operating system which differs from Windows or MacOS by not needing software to be installed. As such, there is no risk of being infected by a virus and there is no need to do software updates or other maintenance. Rather, ChromeOS uses webapps and stores the data in the cloud on Google's (and other companies) servers. Webapps have come a long way recently, and it's now possible to edit pictures (either with google+ photos or with pixlr), as well as word documents, excel spreadsheets, and powerpoint presentations using Google drive. Some webapps are now even capable of being used offline. I wouldn't use ChromeOS at the office, but I find it to be just fine in my living room. It does all the tasks I need to do at home while being reliable and requiring no maintenance on my part. I especially like how my pictures are automatically uploaded to my Google plus account when sliding in my digicam SD card :)

Data from NPD shows that Google's Chromebooks (running ChromeOS on top of the Linux Kernel) accounted for 21% of all notebooks sales in the U.S. from January till November 2013. This is up from 0.3% the previous year. The data also shows the Chromebook sales accounted for 9.6% of all laptop and tablet sales in 2013. The market share of the Chromebook is expected to continue to rise in the next few years.

Wireless hubs and routers are another class of electronic devices where Linux is making inroads. In the last couple of years, hubs and routers have improved significantly: they are now equipped with multicore CPUs, hundreds of meg of RAM, and several wireless and ethernet ports. This type of hardware can't function properly with limited firmwares written by electronic companies — rather, a fullblown multitasking operating system is needed.
My newest home wireless router, the ASUS RT-AC68U running Linux 2.6.36.

I bought recently an ASUS RT-AC68U router [1] to overcome some problems I was having with my wireless network in my apartment (there used to be some issues connecting to the wireless router from some rooms due to interference). I chose the ASUS RT-AC68U based on some reviews I read on CNET where it received an editor's choice award [1]. Only after I installed it and looked up the logs on the web user interface did I find that it was running on Linux kernel version 2.6.36. I suspect this is not a fad and that more and more hubs will be running Linux in the future for increased performance.

The Chromecast [1] permits the streaming of YouTube videos, Google movies [1] and Netflix movies [1] on a TV using the HDMI port. To cast, all that is necessary to do is to view the video on a cell phone (or Chromebook or Chrome browser on a laptop) and then click on the TV icon which will appear after the Chromecast has been setup. The video will then be streamed to the TV in high resolution. The Chromecast is powered by Linux and is worth its $35 if only to view some kpop music videos [1] in high res on a large screen.