CrossOver Compared to Competing Emulation Solutions

codeweavers

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Every Windows compatibility solution has pros and cons.

Overview: Whether you're running a Linux or Mac OS X machine, chances are you need a way to run at least some Windows applications or games that aren't available on your platform of choice. And you have your choice of potential solutions to this problem. This page illustrates some of the key advantages that CrossOver has in relation to the other compatibility solutions.

When presented with the need to run Windows applications on a Mac or Linux machine, you have basically three main choices:

- ❖ Dual-booting: running two separate operating systems on one PC, and switching between them as needed by rebooting. Applications such as Apple's Bootcamp allow this to occur on a Mac OS X machine, for example.
- ❖ Running a virtual machine: Emulation products such as VMWare and Parallels allow you to install a copy of Windows within a logical partition within your native operating system. The Windows applications essentially run in a separate "box within a box."
- ❖ Running Wine or CrossOver: Unlike emulation, Wine is a re-implementation of the Win32 API, allowing applications to run as if natively on the target OS. CrossOver is a commercialized version of Wine.

Each solution has its advantages and disadvantages. This document is provided to help identify and evaluate key points of comparison between CodeWeavers' CrossOver products and some of its key competitors.

Technology Approach

General Approach

Dual-booting is exactly what it sounds like—shutting down one operating system, starting another, and dealing with the file transfer issues associated with same. "Bootcamp" is the canonical solution of this kind in the Mac space, for instance. "Emulation" products such as VMWare, Win4Lin, and Parallels, on the other hand, actually run Windows applications in a

separate virtual machine on the client PC, where the emulator handles displaying the applications under the target OS. A third alternative, Wine, powers CodeWeavers' CrossOver line of products. Wine is a complete re-implementation of the Win32 API under Unix (including Linux and Mac OS X). As a result, using CrossOver to run Windows applications does not require one to reboot, or to have a Windows OS running in the background. Instead, Windows applications run "as if natively" directly under the target OS. This provides the user with an immediate cost savings associated with the purchase of the Windows OS, and has other implications as well.

Memory Allocation

Most emulation technology requires a dedicated block of memory to run the emulator. It is not uncommon, for instance, for a VMWare session to soak up 128MB of system RAM. This RAM is used exclusively by the emulator as long as it is running, regardless of whether any applications are being run. CrossOver, on the other hand, consumes RAM dynamically, based on the application's needs at the time.

Ease of Use / Convenience / Integration

Dual-booting, of course, is the least convenient solution in that it entails losses of time and convenience associated with shutdowns and reboots, as well as moving files from one environment to the next. To a lesser extent, one of the practical outcomes of an emulator approach is that the emulator by necessity "carves out" an environment that is somewhat separate from the target OS on the host computer. For instance, in order to establish a VMWare session, a user literally has to boot Windows in a separate partition and wait for it to load before then loading the actual application. Given the memory issues just discussed, it is impractical for many users to simply keep VMWare running in the background at all times, meaning that the user suffers this startup penalty whenever s/he uses the software. By contrast, CrossOver suffers from no start-up lag for the OS—the only delay is the time it takes for Word to load.

Similarly, in terms of file integration, dual-booting is the least convenient solution, because file-sharing requires moving files from a swap section on one's drive, or a network drive, into and out of the different OS environments. This leads to losses of productivity. Emulators suffer from the some of the same drawbacks, in that the solution lives in its own sandbox as far as file-sharing is concerned. As a result, moving files in and out of an emulator requires mounting Samba drives and so on, which can be clunky, and is time-consuming as it adds unnecessary

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steps to the process. With CrossOver, the applications run natively under the target OS, and files can therefore be saved and moved around normally within that OS, which is the most efficient way to work.

System Performance

Dual-booting, by definition, imposes no performance "hits" per se. However, emulation technology typically imposes a penalty in terms of performance. Wine does as well, but it tends to exact a smaller premium, meaning that CrossOver offers very good performance to the average office user.

Cost

Dual-boot solutions require purchasing copies of both target operating systems for the machine in question, which can impart considerable expense, as a Windows Vista license retails at $199.99. Likewise, emulators tend to be even pricier, since they require both the emulation software and copies of both target OS's. For instance, VMWare Workstation is $99.00, and Win4Lin is $69.99, in addition to the cost of XP. In other words, complete emulator solutions retail for between $269-$299. CrossOver retails for $39-69 per license (depending on the variant purchased), and requires no OS license.

Application Footprint

This is the current major shortcoming of Wine, and hence CrossOver. CrossOver does not yet support as wide a range of Windows applications with the same degree of fluidity that either native OS solutions or emulators do. This is because emulators truly run Windows applications natively, whereas Wine currently has not completely re-implemented the Win32 API. For this same reason, CodeWeavers has focused its efforts on running a discreet set of high-value office productivity applications like MSOffice.

The result of this focus has been that for applications like Word, Excel, and Powerpoint, which are on 90+ percent of desktops, CrossOver is a perfectly viable alternative. And as CrossOver continues to improve, of course, the supported Windows application footprint will continue to increase as well. [CodeWeavers currently supported list of applications can be found at:

http://www.codeweavers.com/compatibility/browse/name

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CrossOver Evaluation Matrix

The following grid graphically summarizes the attributes discussed in this white paper.

	Dual Booting	Conventional Emulation	CrossOver
Can run Windows applications without rebooting	By definition, **no.**	✓	✓
Can run Windows applications without needing Windows OS	No	No	✓
Price	$200-300 for Windows OS license	~$90 for emulator, $200-300 for Windows OS license	$39.95 - $69.95, and no Windows OS license cost
Can start Windows applications directly from Linux or Mac OS start menu	**No.** Requires rebooting.	**No.** Requires booting emulator, starting Windows application within emulator.	✓
Can launch Windows file attachments directly from Linux or Mac OS email	**No.** Requires saving file to network drive or swap file area, then rebooting and opening under Windows.	**No.** Requires saving file to local file system, booting emulator, then opening within virtual environment.	✓
Can launch Windows files directly from Linux or Mac OS file browser	**No.** Requires copying file to shared file system, then rebooting and opening under Windows.	**No.** Requires copying file to shared file system, booting emulator, then opening within virtual environment.	✓
Uses native file system to save files (Linux or Mac OS)	No.	No.	✓
Runs all Windows applications	✓	**No.** Some applications which require either video or hardware driver support may not run. This is particularly true of games.	**No.** Wine currently runs many applications well, some only so-so, and some not at all.
Runs Windows applications at native speed	✓	**No.** Virtual environment imposes performance penalties.	✓
Can allocate RAM dynamically	Well, yes; once you've rebooted, of course.	**No.** Static RAM allocation, and attendant performance issues.	✓