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This issue:
Virtual Machine Software

VMware is now making one computer into many more computers—some real-world examples of virtual machines, plus a VMware overview.

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Digital Dave

“Digital Dave answers your tech questions.” by *Digital Dave*

A reader wonders about backing up device drivers; Is killing your computer's power, rather than going through the shutdown sequence, really so bad?; When will Windows 7 be available?; a reader wonders about power-supply ratings for video cards.

Dear Digital Dave,

My wife has a Windows XP computer that has a few quirky responses and functions a little slowly. Over several years, it's become cluttered with old programs, orphaned files, etc. I plan to reformat and reinstall XP and the few applications she uses.

I'm familiar with backing up data, but need help about backups for drivers. How can I copy all of them on to a flash drive in case XP doesn't find them upon reinstall?

Steven Rosen
San Diego

Dear Steve,

As far as I know, there is no easy way to back up the device drivers in Windows XP. However, there are programs that have been written specifically for that purpose. I found a list of some at Download.com (*www.download.com/1770-2242_4-0.html?query=xp+Drivers+Backup&searchtype=downloads*), many of them free. I haven't used any of them. Perhaps other readers can make some recommendations.

The reason I've never had to back up my drivers is that there has been no need. In the old days, if a driver was not already included in Windows, it came with the new device drivers (printer, expansion card, etc.) on a separate disc. If I needed to find a new driver over the Internet, I would download it to a special Drivers Download directory. Then, I would have the driver available for any reinstallation.

Today, many of the plug-and-play devices will automatically go out to the Internet to obtain the latest drivers, eliminating the need for even a disc.

If there is a time when I lose a particular device driver, I can usually find it on the Internet at the manufacturer's site. Most of the common drivers are included with Windows.

There are sites that specialize in offering drivers for almost everything. I avoid these sites both because I find them annoying and they could be dangerous. These sites usually put you through a long string of windows, forcing you to view all their advertising. It isn't worth the time. Plus, anyone can set up a downloading site with a name that sounds reputable. It could be located in some obscure country with the intention of spreading computer viruses. I always go to the manufacturer's site for drivers.

Digital Dave

Dear Digital Dave,

We are cautioned not to just kill the power to shut down a computer, but to go through the proper shutdown sequence. I haven't found anyone who can tell me why this is necessary, or why killing the power would hurt the computer.

I've had to do this a few times in disgust when my Sony with XP froze up, so I just said to heck with it and did it. Later it started up trouble-free. What can happen if I do this again?

Charles Forman
San Diego, CA

Dear Charles,

Back in the day (way back), sudden power loss in the middle of a hard-drive operation wouldn't properly park the heads, but even then it didn't often cause damage.

The biggest risk to cutting power without a proper shutdown is data loss. If you have open programs with unsaved data, you're likely to lose it. Of course, if your machine freezes up, then you have no choice but to cut the power. It is not likely that your computer or any of its components will be damaged in the process. Your primary concern is your data and software.

When shutting down, the operating system goes through a series of closing processes that access the files it uses regularly. Occasionally, an improper shutdown can garble critical data, causing other random problems.

Whenever possible, you should do the normal shutdown. If your computer freezes, don't be afraid to do a hard boot. Everyone needs one occasionally to get started again.

Digital Dave

Dear Digital Dave,

When will Microsoft Windows 7 be available to the public?

Maryanne
San Diego

Dear Maryanne,

Microsoft Windows 7 is now in beta testing. That means millions of people are now using (testing) the product looking for bugs. Microsoft has been hesitant to announce a date for a general release to the market due to the usual unforeseen problems associated with any software release. However, the beta release appears to be going well, and there are hints that Windows 7 may be ready for back-to-school time.

Anyone who has spent much time watching Microsoft release software wouldn't expect Windows 7 to be ready before 2010. That means it will probably be imposed on the public this fall in a semi-ready state.

On the positive side, Windows 7 is getting excellent initial reviews—although maybe not good enough for those who were soured by the Windows Vista release. It appears to be a trimmed, more agile version of Vista.

Digital Dave

Dear Digital Dave,

I'm looking to get a new video card (GeForce 9800GT). The minimum rating on the power supply (as recommended by the manufacturer) is 400 watts with a combined +12-volt rating of 26 amps. I have a Thermaltake 430 watts, but the 12-volt rating is only 18 amps.

I'm running an AMD 6000X2 with 4GB of RAM, a SATAII hard drive and one optical combo drive. Am I risking a major issue with the motherboard, power supply, processor, video card, or all of them?

Thanks in advance!

Jay
San Diego

Dear Jay,

Yes!

What's relevant is not the total power (430 watts) of your power supply, but what's available at the right voltage. While your 430-watt power supply would appear to be enough for your entire system, it doesn't have enough at +12 volts. (The 5-volt power is primarily supplied to the low-power electronic circuitry and USB devices.)

The +12-volt rail with an 18-amp threshold can supply up to 216 watts (volts multiplied by amps). The problem is that this is shared between the video card, the CPU, mechanical drive motors, etc. The recommended 26-amp threshold yields 312 watts (96 watts more than your power supply), which is, apparently, enough at minimum. You'll want to at least meet this minimum recommendation.

The maximum draw of the GeForce 9800GT alone is 105 watts. A standard video card draws closer to 25 watts. A CPU can draw 50 to more than 100 watts, depending upon the type of CPU. Hard drives and optical drives can add 25 watts per drive at +12 volts. Various other devices will also add to power usage. Even adding a second hard drive will affect the total system requirements. It is usually recommended that you exceed the total power requirements of all of your devices by 30 percent.

Your power supply does not meet the minimum requirements for a high-performance graphics card. It might work, but it would likely be unstable and may shorten the lifespan of your system. Go for a power supply with the recommended +12-volt combined rating of at least 26 amps. It's important to have a power supply that can easily handle the load.

Digital Dave

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Real-World Virtual Machines

"Quickly create a brand-new computer." by Scott Millard

IT support people and software developers have been utilizing the power of virtual-machine software for quite a while, but in the past couple of years it's been finding its way onto the computers of average consumers.

All of us are looking for the perfect computer—well, at least all of the techies like me. There are a ton of choices when it comes to hardware, but it is a different story when deciding on an operating system. For this vital part of computing, we have a handful of choices. To the faithful Mac user and most Linux/Unix users, this decision is a no-brainer. These people will use Microsoft Windows only if they are on a deserted island and their own computer is at the bottom of the ocean.

Whether you are the hard-core type or like the rest of us, Virtual Machine (VM) software is worth a closer look. The king of this hill in this category is VMware (*www.vmware.com*), a company founded in 1998, operating out of Palo Alto, Calif. IT support people and software developers have been utilizing the powers of virtual-machine software for quite a while, but in the past couple of years it's finding its way onto the computers of average consumers.

If you are new to the VM concept, it is true to its name. The whole purpose of VM software is to give you one or more virtual computers inside your physical computer. So why not just buy another computer and have two real computers, rather than one real one with a fake one inside it? After all, computers are cheap now, right?

The answer is simple. You don't need to buy another computer, make space for it, and manage two monitors, towers, mice and keyboards, when you can get the same results by simply installing some software. Of course, you will need a licensed copy of whatever operating system you want to load into a virtual machine, but that's to be expected. What follows is my experience with two computers, a Mac and a Vista machine, using VMware. You can decide for yourself whether the concept makes sense.

VMware Fusion for the Mac

As a software developer, I initially bought a Mac to help isolate my Windows-development machines from the perils of phishing, spam, viruses, Trojan horses and all of the other misguided, malicious tricks that hackers use to

steal your hard-earned money and waste your precious time. The idea was to use the Mac strictly for e-mail, browsing the Web, storing photos, editing videos, and all of the other fun things you can do with computers. So far, my plan has worked out pretty well, with the exception of the fun part—but enough about me being a workaholic.

One of the important things about developing software is ensuring that before it is released to the end user, it is well tested. We all know how imperfect this process can be, even for giants like Microsoft. Unfortunately, it is not humanly possible to release a perfect software program, especially for the first release. (I sleep better at night knowing most people are aware of this fact.) How does this relate to VM software? A virtual machine is the ideal tool for quickly creating a brand-new computer. This is just one reason to use VM software, but it's a darn good one.

Figure 1 shows the Windows XP machine that I have set up on my Mac. Notice how the XP machine is running in a window in the Mac OS, just like a regular Mac application. This is the coolest thing about VMware. You can either run the machine as a window and easily click back and forth to the Mac OS, or make the VM run in full screen. In full-screen mode, the XP VM looks just like a PC computer, and a simple keystroke gets you back to your Mac desktop. Notice the little icons in the bottom-right corner of Figure 1; these allow you control over the devices that are connected to your host computer, in this case the Mac. These icons allow you to connect or disconnect the various USB devices and optical drives, and manage the network, hard disk and sound settings.

Figure 1. Windows XP machine set up on Scott's Mac.

VMware Workstation on the PC

I recently decided to buy a 64-bit Windows Vista machine as my main development computer. From dealing with our customers, I was fully aware of the problems many people are having getting older software and peripherals to work in 64-bit versions of Windows. Since I was happy with VMware Fusion on my Mac, and I knew that VMware had a Workstation version that runs on the PC, I wasn't too concerned about any problems I might have with compatibility. My solution was to install VMware Workstation on my Vista machine, and create a 32-bit

Windows XP virtual machine. In fact, this was a must for me, because our older development tools won't even run properly in 32-bit Vista.

After emptying my wallet for the new computer and an extra $150 (I found it on sale!) for a copy of VMware Workstation, I was anxious to get my new computer set up. This was a pretty good deal for the Workstation version since it normally sells for just under $200. Quite a bit more than the Mac Fusion program, which runs only about $75.

With two monitors on my new computer, I am able to run the VM XP machine on one monitor, while the other monitor is used for Vista. This works out even better than on the Mac, because I can fill the screen with the VM, and still have Vista running on the other monitor. Of course, I can always run XP in a window and move it freely around my desktop if the need arises.

I recently became adventurous and installed the new Windows 7 Beta in a VM just to check it out for myself—and test our software in it. After downloading the 2.5GB ISO (disk image file) from Microsoft's Web site, it took only about 10 minutes to get Windows 7 up and running. I haven't looked at the limit for the number of VMs that VMware can handle, but I'm sure it is more than you can realistically manage in your head at any given time. It's difficult enough for me to switch between two operating systems, let alone six or eight.

Comparing VMware Application Windows on the Mac and PC

Figure 2 shows the VMware Workstation window with the Windows 7 VM running inside it. Notice how the PC version of the software is a little more cluttered (with tools and a menu tree) than the Mac version. VMware is obviously maintaining the simplicity of the Mac in the Fusion program. Mac users are accustomed to Command-key combinations doing the work, which is done with more visible menus in Windows. I still haven't decided which practice I like better.

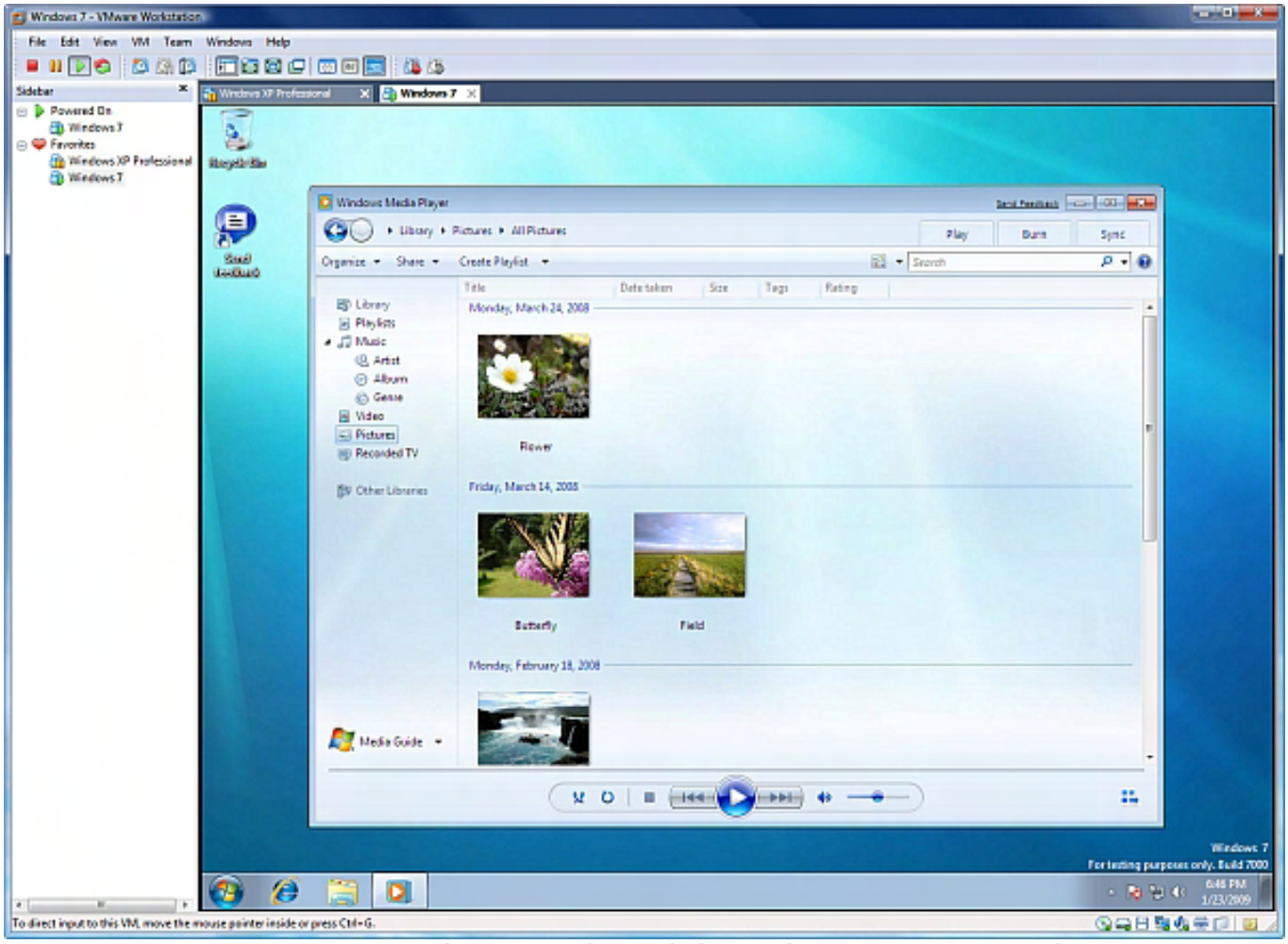

Figure 2. VMware Workstation window with the Windows 7 VM running inside it.

Notice the difference in the windows of the VMware applications themselves. The Mac tool is straightforward, simply listing the VMs you created on your Mac. To start the VM, you double-click on its name in the list (see Figure 3). On the PC, the VMware application is more like any other Windows program. You have a menu tree, some tools on a toolbar, and some tabbed windows to show details. The Windows version reminds you what resources you have available for your VM, whereas the Mac version hides all of this information, forcing you hunt for it.

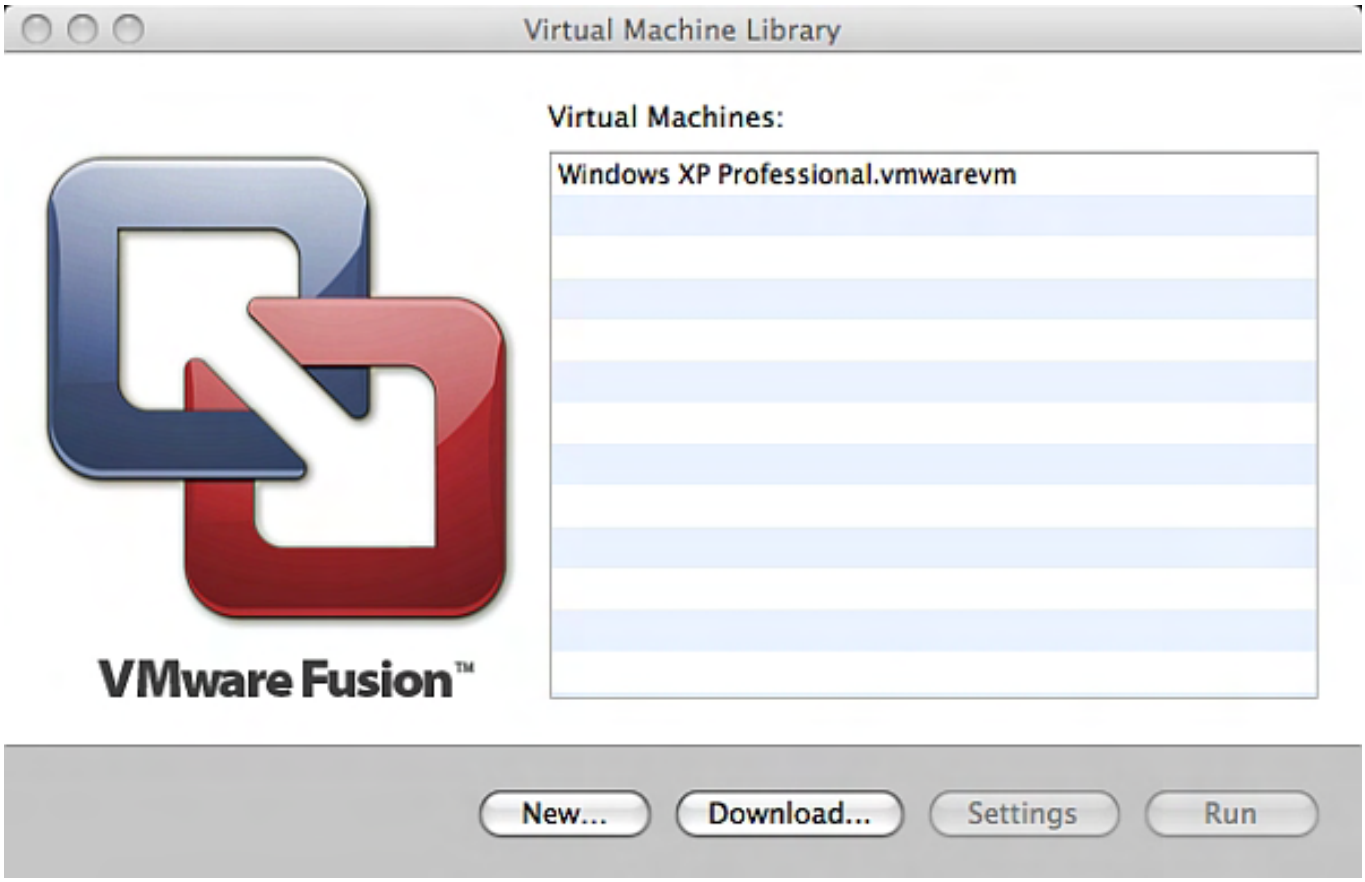

Figure 3. To start the VM, double-click on its name in the list.

When you first install a VM, both versions are very easy to set up. The only decisions you really need to make are how much hard disk space to dedicate to the VM, and how much memory it can use. Figure 4 shows how I configured my Windows 7 VM to use 1GB of RAM, and 60GB of disk space. One option during the Windows VM setup that I don't recall the Mac having is a choice to use one file for the entire VM, or multiple files at 2GB each. It was mentioned that the multiple file method made it easier to transfer a VM to another computer, but I opted for the single file method just to be difficult.

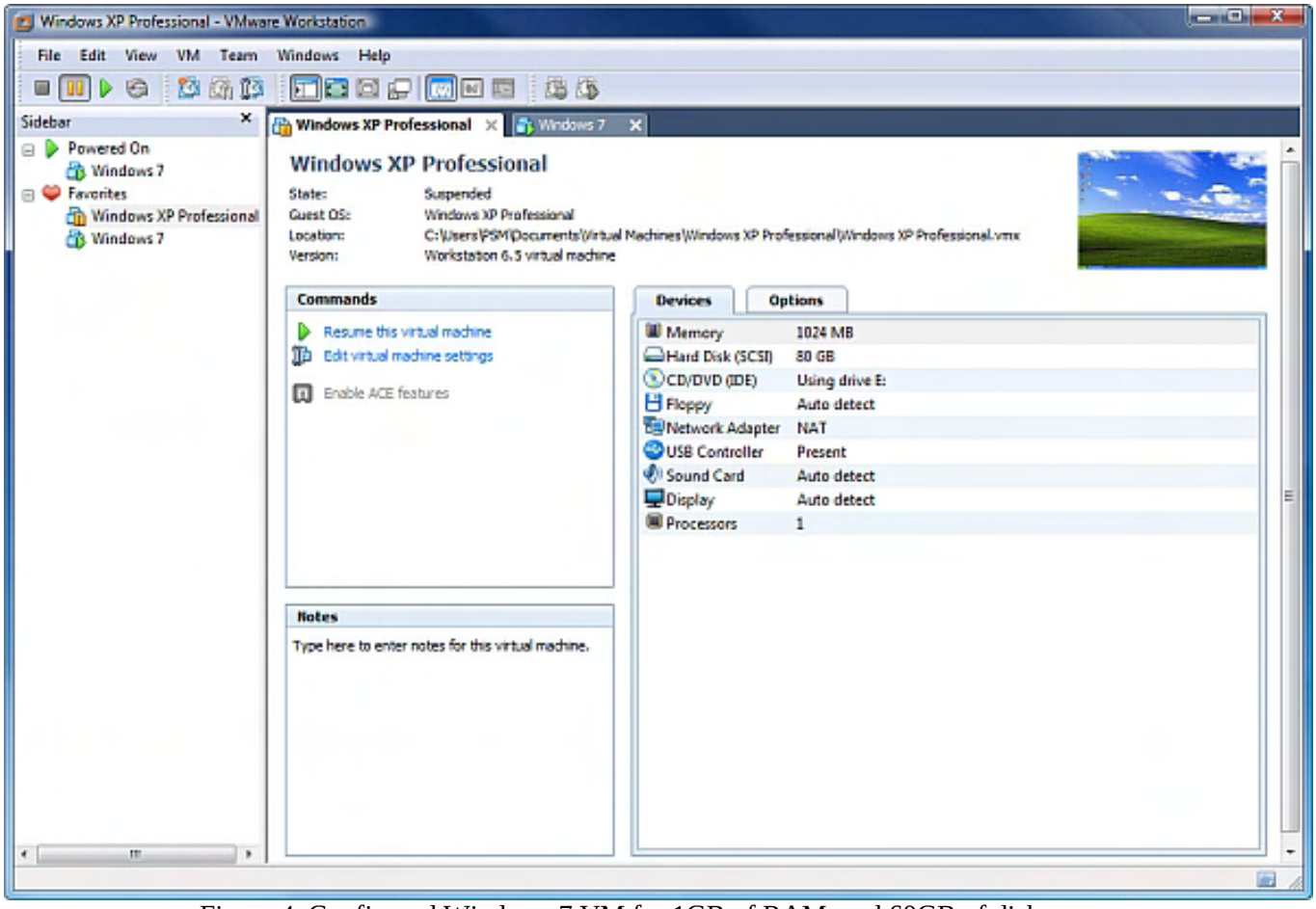

Figure 4. Configured Windows 7 VM for 1GB of RAM, and 60GB of disk space.

You can adjust the size of the hard disk that you allocate to your VM, plus you can easily change the amount of memory the VM uses.

Dealing With Peripherals

Both the Mac and Windows versions of VMware give you the same control over your peripherals. Once you get up to speed with using a VM, you find these little tools very valuable. For example, if I plug in a USB thumb drive and want to use it in my VM, I will check the USB icons to see if that device is connected to the VM instead of the host machine. If I then want to use the thumb drive on the host after I use it in the VM, I would use the icon to disconnect the device from the VM, which will connect it to the host. The same thing applies to a DVD when you insert it. VMware did an excellent job with making it very simple to swap these types of peripherals between the host and the VM.

Network access from your VM is something you don't have to worry about, as this is designed to allow you Internet access right out of the box. The VM essentially shares the host's network connection through the existing network adapter. I don't have any problems getting on the Internet with my XP VM on the Mac, but I do have trouble seeing the other computers on my local network. This can be a little frustrating when I need to access or copy files from another PC on the network. Of course, I could always contact VMware for support, which once before I was able to do without a problem.

The one trick that both VMware products offer is direct mapping to the host's local hard drive. So one way I get around the local network problem on the Mac is to switch over to the Mac OS, copy the files I need across the network to a Temp folder, then switch back to the VM and copy the files from that folder on the host to a folder in my XP's C drive. A few more steps required, but it works fine. I don't seem to have this same problem on the Windows VM, but I noticed I do need to type in the network name of the computer I want to access in order to

connect to it. I've experienced this with XP before, so I don't think I'll blame it on VMware.

Printing from the VM

I have chosen to avoid the USB-managing situation for printing on the Mac by using my network-enabled printer in the XP VM. Since this printer is simply an IP device on the network, the VM doesn't need to borrow a local device from the host. Yet another advantage to network-enabled printers.

On my Vista machine with the XP VM, I did install a local USB printer that is plugged into the Vista box. There was no problem at all with this process, and it behaves exactly like it would on a stand-alone computer. The only trick is to use the VMware tools to make sure the printer is connected on the VM instead of the host. Of course the network printer that I use on the Mac works equally well on the Vista VM.

A Few Little Quirks

I mentioned the inability to browse the local network on the Mac VM; the other strange thing on the Mac is that the number pad doesn't work in the VM. I have to use the number keys at the top of the keyboard. I'm sure there is a cure for this, but I have just been too lazy to find it. On the PC, the only thing I noticed so far is that my Logitech mouse software doesn't seem right. I used the same software on a stand-alone XP machine, and it just doesn't look the same in the VM. This is probably a "user error" because the software loaded fine and it gives me some control over the mouse, so I might have just loaded the wrong version of the software. All in all, these are minor gripes that I'm sure can be fixed with a little effort on my part.

Summing It All Up

Considering I have the benefit of the latest and greatest 64-bit Vista machine, 8GB of RAM and a Quad Core processor, running a couple of virtual machines on this computer doesn't phase it at all. It is worth mentioning, however, that you will notice a small performance hit when using a virtual machine, not on the host computer, but the VM itself. This is more noticeable on the Mac than my new computer, but it is noticeable nonetheless. So the moral to this story is, make sure you have a powerful computer with lots of RAM and a large hard disk before you get into a virtual machine. If you install it on an older machine and plan on using the VM a lot, you won't be happy.

Between the security of not worrying about crashing the host computer, isolating programs, testing new operating systems, testing clean installations, and using completely different operating systems, the possibilities are almost endless when using virtual machines. The best part about it is you don't need more computers, more desk space, or a bigger room to do all of this. You need only some software and a little extra cash—but don't forget about the cost of the operating systems you want to install.

In short, I am more than satisfied with VMware on both the Mac and the Vista machine. I literally have the best of all worlds between the two machines. The next thing I need to do is install a Linux VM on the Vista machine, and I'll be in "Hog Heaven."

Scott started with *ComputorEdge* as an intern in the mid-1980s. In 1994 he founded Infinitive Solutions and worked as a computer consultant working with small businesses—providing hardware, software, and database application service, support, and installation. Eleven years ago, he took on a partner to start a software business called GDS Storefront Estimating, publishing, selling, and supporting software for the commercial glass industry. You can learn more about his company at *www.winbidpro.com*.

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VMware Overview

"Creating a virtual machine solves many problems." by Michael J. Ross

> Regardless of whether you need a data center VM solution for your company, or a solution for your single desktop, VMware should have a product that can match those needs.

Imagine that there is a computer program that is not supported by the operating system (OS) that you are currently using on your computer. For instance, there may be a Linux application that you would like to try out, but it will not run natively on your Windows XP machine. Or perhaps you have converted over from Windows to Linux, but now you want to run a tax-preparation program that has only a Windows version. You could try to borrow someone else's computer, but that oftentimes is not possible, and certainly not convenient for both you and your friend. You could add a new partition to your computer's hard drive, install the needed OS on the partition, and then use dual-booting; but that approach can be quite time-consuming and risky, and requires a nontrivial amount of computer knowledge and gutsiness.

What is true for individuals in this case is also true for countless small software-development companies that need to test their products on every version of every operating system they (allegedly) support—before releasing it to the public—but do not have the financial and technical resources to purchase and maintain multiple operating systems (running on multiple computers or partitions). For an individual, this may mean not being able to run a particular program, with no serious financial impact. Yet for a software-development firm, it could mean the difference between their new product running smoothly for all of the consumers running a variety of operating systems (with many versions), versus the monetary and publicity consequences of their product failing on one of those operating systems for which it had not been tested.

"I ordered a computer from this company and this is all they sent me."

This is the quandary that an individual or an organization can encounter when trying to run an application. There is a similar situation for operating systems and hardware. Imagine that you want to run an OS on a hardware platform for which it was never intended, perhaps for reasons similar to the application-testing scenarios mentioned above. You or your company might not be able to afford to purchase all of the combinations of hardware components that would be ideal if you had an unlimited budget.

These challenges are now being met through the use of virtualization. Specifically, this involves the development and use of new computer programs that can run an operating system, making the OS "think" that it is controlling the computer's hardware—actually, the device drivers—directly, when in fact its instructions are being passed through this extra layer. Such a program is known as a "virtual machine" (VM) or "emulator," because it emulates a computing environment or machine, and serves as a layer separating the guest OS from the (otherwise incompatible) hardware. Note that the terminology has evolved over time, and continues to evolve, and thus various authors and reference sources may use the terms somewhat differently from one another. Yet the essential ideas are well understood and recognized.

VM Leader

There are many virtual-machine applications and suites of products available, including commercial products and

open-source ones. Some of them are more specialized than others; for instance, some specialize in allowing users to run a limited set of the most popular Windows applications on a Linux machine, without the need for installing a version of Windows. (You can imagine how Microsoft executives feel about these free products.)

In the commercial world of virtual machines, the most well-known market player is VMware (*www.vmware.com/*), which first started out offering an eponymous and revolutionary product that was capable of hosting multiple operating systems on a single computer. Depending upon the particular edition of VMware in question, the operating systems could include Windows (NT, 2000 and XP), Linux, Novell NetWare, or Solaris x86. As happens with so many other mature software lines, VMware began with that single edition, but has since rolled out several different ones, with each targeted toward specific needs and budgets.

Most of their 19 products fall into two major categories—data center and desktop. In this article, we will focus on key components of those two categories, and will not explore the remaining four products (VMmark, Player, vCenter Converter and Studio).

Cloud Power

Of the 10 products in that first category, VMware Infrastructure, the company's flagship product, allows the purchaser to create a virtual data center that can be thought of as an "internal cloud," which the company's Web site defines as "an elastic, shared, self-managing and self-healing utility that can federate with external clouds of computing capacity." This allows a company's information technology (IT) staff to use all of their virtualized resources flexibly, free from "the constraints of static hardware-mapped applications."

VMware Infrastructure encompasses application services that make it possible to support operating systems (such as Windows and Linux), application frameworks (such as Microsoft's .Net and Sun Microsystems's J2EE), software-deployment strategies (such as software as a service, a.k.a., SaaS) and individual computer applications. It also encompasses infrastructure services that allow you to utilize a variety of hardware, data storage and networking products. These can be connected to internal and external clouds (not the airborne variety, but instead abstracted computational resources that are usually located on the Internet).

As a high-end product, VMware Infrastructure's list of features and capabilities is substantial, which is commensurate with the requirements of any enterprise that must make a commitment to a range of operating systems, hardware platforms, etc. The licensing costs are equally substantial, ranging from $1,540 to $2,640 for VMware Infrastructure Foundation, with various levels of support. It is available in four different languages, and consists of ESX, Virtual Machine File System (VMFS), Symmetric Multi Processing (vSMP), vCenter Server Agent, Consolidated Backup and Update Manager.

Coming Out of the Clouds

VMware's desktop products can be divided between those aimed at companies and those aimed at individual consumers. In the enterprise category, VMware View (formerly known as VMware Virtual Desktop Infrastructure) supports the creation of virtual desktops on any hardware device, with the additional benefits of centralized control. As a result, the IT staff can run all of the company's desktops in a central location, for easier management. At the same time, individual users within the company can view their applications and data in their own desktops, which can be fully customized, just as if they were running on hard drives in PCs located in their cubicles. Prices range from $1,815 to $2,456.25 (why do they bother specifying 25 cents?!).

The VMware products in their consumer category are well-suited for people who simply wish to run an application on an OS that would normally not support it—without the need for creating a virtual data center in the family room. At the top end of the scale, VMware Workstation allows you to run multiple operating systems on a single PC (desktop or laptop). It runs on Windows and Linux (as the host OS), and supports most desktop and server editions of Microsoft Windows, Linux, Solaris x86, Netware and FreeBSD (as guest operating systems, which in

turn can run the applications that they support). Pricing starts at $189 for a single license, and goes up to $1,690 for 10 licenses.

For anyone who wishes to try out virtualization, without any upfront financial commitment, VMware Player makes it possible, because it is completely free of charge. It allows you to operate any virtual machine created by VMware Workstation, Fusion, Server, or ESX, as well as Microsoft Virtual Server or Virtual PC. VMware Player can also be used to test any of the virtual appliances available from the VMware Virtual Appliance Marketplace (*www.vmware.com/appliances/*).

Regardless of whether you need a data center VM solution for your company, or a solution for your single desktop, VMware should have a product that can match those needs. In all cases, you can download trial versions of the given product, see demos online, find local resellers, and read more information in the online forums.

The advantages of virtual machines are many. As a result, we will most likely be seeing more use of them in the future, with the proliferation of different operating systems, their versions, hardware platforms and applications.

Michael J. Ross is a Web developer (*www.ross.ws*), writer, and freelance editor. He creates Web sites that help entrepreneurs turn their ideas into profitable online businesses.

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Windows Vista Tips and Tricks

Windows Vista Tips and Tricks

"More on File Associations" by Jack Dunning

File associations allow us to open a file and favorite applications with the mere double-click on a filename or its icon. Here's how to change the settings. Also, a tip on circumventing write-protection in files in Windows Vista.

Based upon the comments from last week, I think it's worth the time to clarify the importance of file associations. While not the most crucial aspect of Windows, it is behind our ability to open a file and favorite applications with the mere double-click on a filename or its icon.

Program Files and Data Files

There are two basic types of files that all computer users encounter. While they may look very similar in a Windows Explorer listing (Windows Flag key plus E simultaneously, then click a Local Drive and any folder), they serve a significantly different purpose.

Program files are the applications that make everything happen (word processors, photos viewers, Web browsers, paint programs, text editors, games, etc.). Without applications, the computer would do no real work. Applications are first installed, then run on your computer. They are usually located in the Program Files, or Program Files (86x), folder on the local drive (C). (The 86x folder is for 32-bit applications.)

The actual programs will normally end with the letters .exe, indicating that they are executable files. Within the same folder, files that end in .dll (application extensions) may also be found. These extensions, which run only in conjunction with the main application, do not open on double-click and are rarely a concern to the user. (Other program files that will load on double-click may use the .com, .cmd, or .bat. extensions. The .bat is for batch files that run with the Command Prompt window.)

Normally, if you double-click on an .exe file, the program will load with a blank, or new, data screen. This is one way to load a program, although it is more normal to select the program from the Start menu or click a shortcut on the Desktop or the Taskbar. The effect is the same—loading the program without any document, or other, file type.

Once the program is loaded, an application window is opened, usually with a menu bar across the top. In the File menu, the Open command will access a browse window to the data files. Data files contain the specific information that the application will use. It may be a text file (the name ending with .txt) or document (the name ending with .doc) for a word processor. For music, a song file may end with .mp3 or .wav. A picture file may use the extension .jpg or .tif. When looking at all the various type of data files and the many applications that use them, we find literally hundreds of file types. (To see a list of all the file types available for a particular program, at the bottom of the File/Open command browse window there is usually a drop-down list of possible file types and their extensions, as seen in Figure 1.)

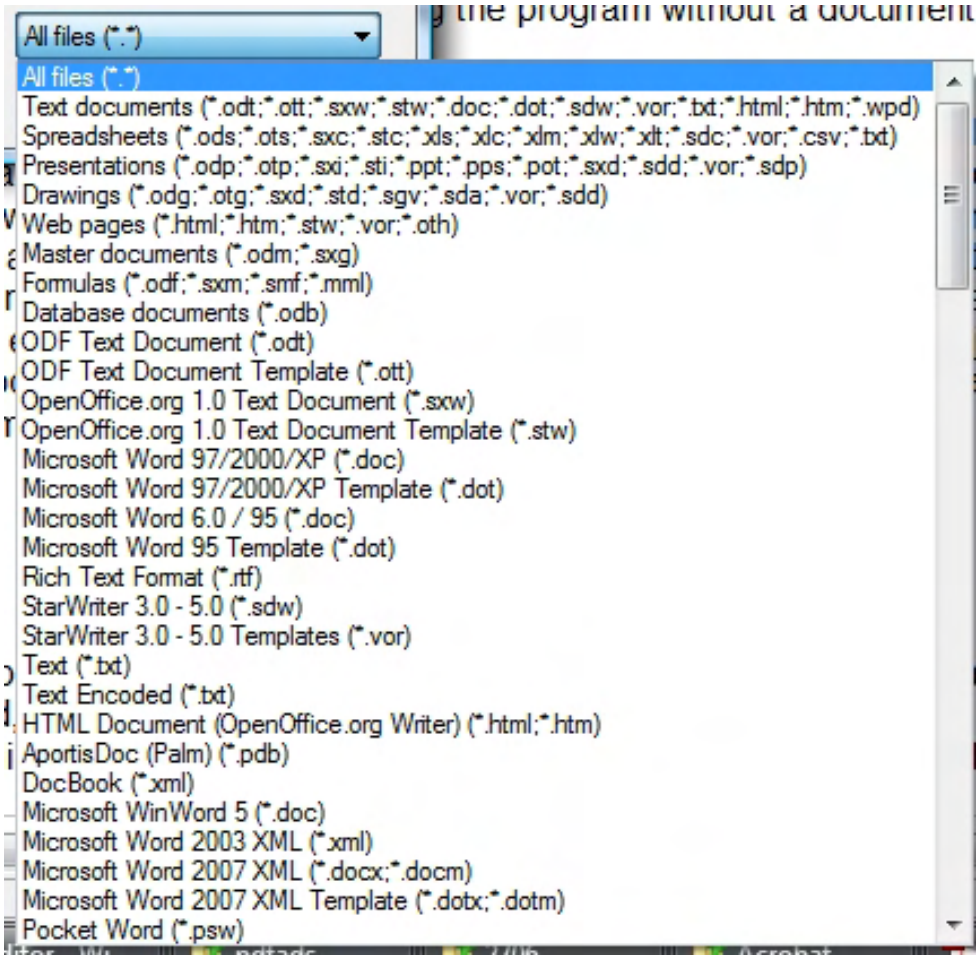

Figure 1. Partial list of file types that can be opened with OpenOffice.

Selecting a file with the Open command will load the data file into the application. This approach to computing is a two-step process: First load the application, then load the data file.

File-Type Associations

File-type associations were created as a way to eliminate the two-step computing process of loading the application, then finding and loading the data. If the operating system knows which application to load for which type of data file (designated by the extension after the last "."), then it can automatically load both the appropriate program (.exe) and the selected data file. This is what occurs in the one-step process of double-clicking on a data (document, music, photo, etc.) filename or icon. The program (word processor, music player, photo editor, etc.) loads, bringing in the double-clicked file with it. Note: The sensitivity of the double-click can be changed in the Buttons tab of the Mouse program (Control Panel/Mouse). Also, hitting the Enter key when the same filename is selected will have the same loading effect.

The problem occurs when we have more than one application installed on our computer that uses the same data file type. Only one default application can be assigned to each file type. That is the program that will open every time that a file of that data type is double-clicked. It's annoying if the default application is not the program you want to use. Last week, I showed how to select an alternative application when you open the file. However, if you want to permanently change the default for a particular file type, then you need to take additional steps. Some of those were discussed in that same column, but there is another feature of the Default Programs window (type "default" into the Windows Start menu, lower left-hand corner of Windows Vista Desktop, Start Search field, and select "Default Programs" from the top of the list), which will give you control over each individual file type.

After the Default Programs window is opened, select "Associate a file type or protocol with a specific program,"

and a window similar to Figure 2 will open. As you can see, there are literally hundreds of types.

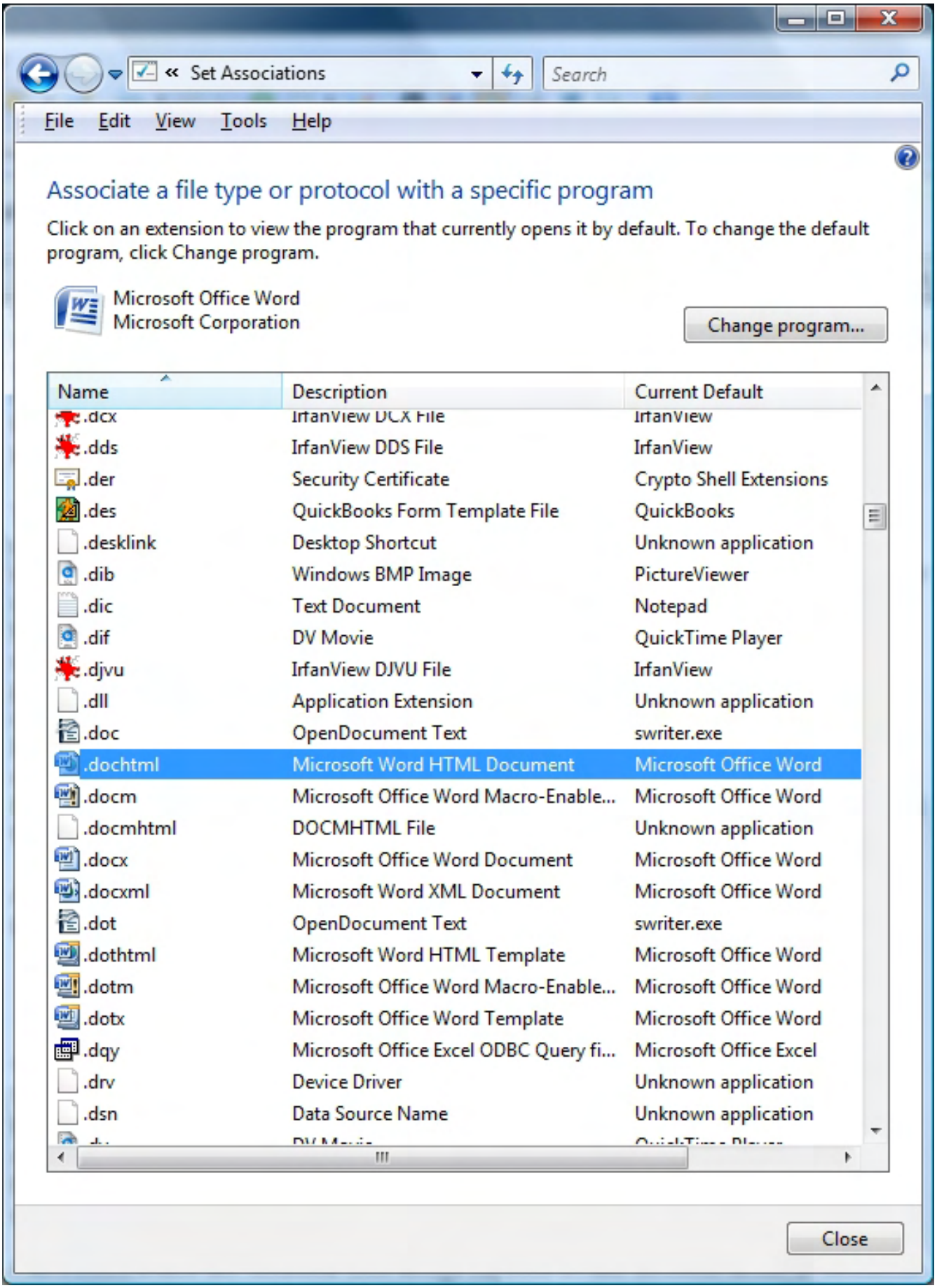

Figure 2. Listing of file types in the Set Associations window.

If there is a particular type of file that is not opening the program you want, then select it and click the "Change program..." button near the top right. Another window with possible program selections will open (see Figure 3). If your desired application is not listed, then use the "Browse..." button toward the bottom right to find it.

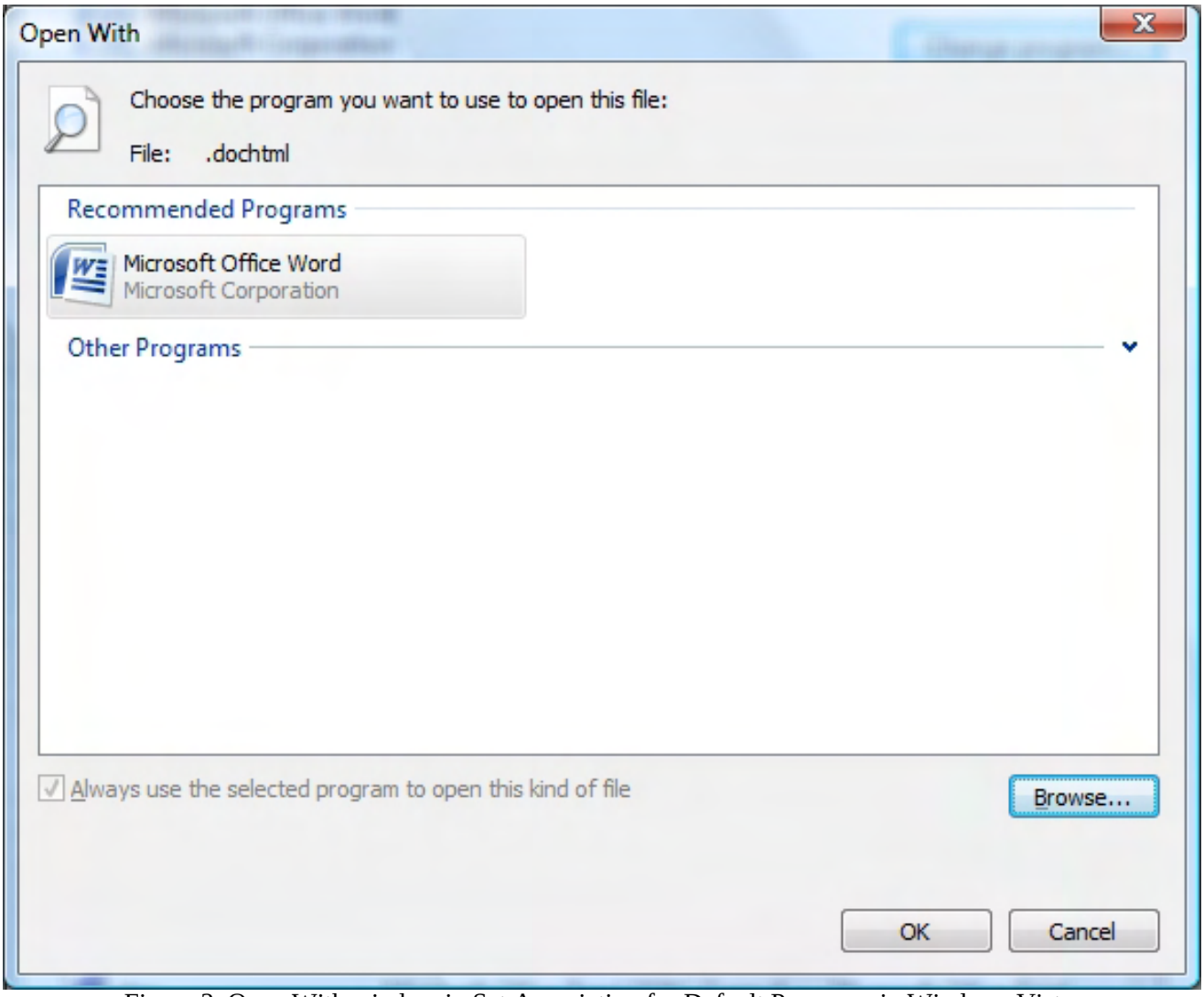

Figure 3. Open With window in Set Association for Default Programs in Windows Vista.

Once set, the new application will be the default and open every time you double-click a data file with the corresponding extension (or when you select a file from a search in the Start menu or Recent Items).

For most Windows users, the double-click of a data file becomes the most common way to open an application. Many applications will attempt to become the default program when first installed and when loading. For this reason alone it is important to know how to change file associations. Otherwise, you may end up feeling trapped by your software.

* * *

Vista Tip: I noticed that at times when I've been editing a file, particularly in Notepad, I haven't been able to save the changes. As it turned out, the file was opened in another program (sometimes a Web browser), which had locked the file and protected it from being overwritten. If I closed the other programs, I could usually save the file. However, occasionally, even when all other programs were closed, the problem would still occur.

I discovered that the write protection was being caused by the preview pane in Windows Explorer. I had opened the file via Explorer (double-click) when I began working. If the Preview Pane was activated (the on/off toggle is Organize/Layout/Preview Pane), then the file would lock—preventing the saving of the file by another program. I needed to either turn off the pane or deselect the filename in Windows Explorer (click another file or in an empty space). Then, I could save the file in the other program.

Jack is the publisher of *ComputorEdge* Magazine. He's been with the magazine since first issue on May 16, 1983. Back then, it was called *The Byte Buyer*. His Web site is *www.computoredge.com*. He can be reached at *ceeditor@computoredge.com*

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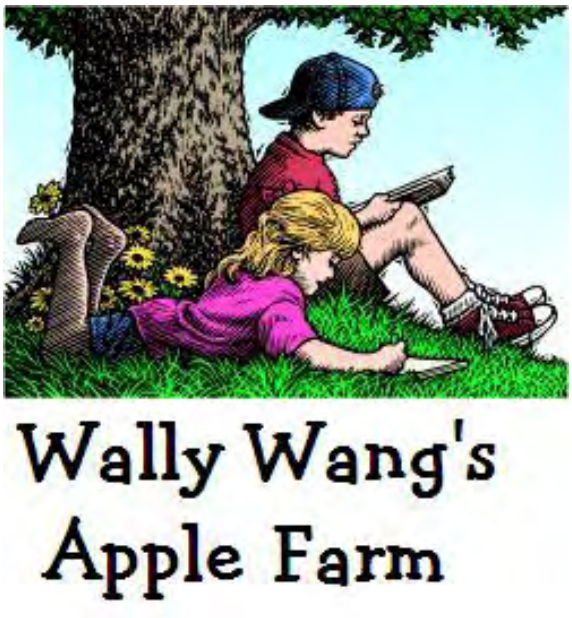

Wally Wang's Apple Farm

“Virtual Machine Software” by Wally Wang

Running Windows on a Macintosh is easy with software like Fusion or Parallels. Also, the iMac and Mac mini are in dire need of an upgrade—and it may be coming soon; and a tip on getting rid of annoying "pop-under" ads.

The first Macintosh laptop I bought was an iBook, and the only reason I bought an iBook was because at the time, it was the lightest laptop on the market with the longest battery life. Of course, my iBook ran Mac OS 9, but I really needed to run Windows XP, so I loaded up a copy of Virtual PC, which emulated a complete PC in software, and installed Windows XP inside this virtual machine.

Naturally, this solution ran sluggishly, but for me, the iBook's low weight and long battery life more than made up for its pokey performance. Occasionally, I'd run a Mac OS 9 program just to see what all the excitement was about with the Macintosh, but I'd do all my serious work running Windows XP inside Virtual PC.

Fast forward a few years, and two major changes have occurred. First, Apple switched from using PowerPC processors to Intel processors, the identical processors used in most PCs today. Second, Microsoft released Vista and turned me away from Windows and toward Mac OS X. I didn't necessarily want to run Mac OS X; I just wanted to avoid Vista, and remaining stuck with Windows XP seemed pointless.

Unlike my iBook that ran Windows XP most of the time with an occasional Mac OS 9 program, my current Macintosh computers (a Mac mini and MacBook) run Mac OS X most of the time with an occasional foray back into Windows through the wonders of virtual software such as Fusion (*www.vmware.com/products/fusion/*) and Parallels (*www.parallels.com/*).

When Apple used PowerPC processors, programs such as Virtual PC had to emulate an Intel processor, which made Windows run slowly. With Intel processors in the latest Macs, programs like Fusion and Parallels simply trick the Intel processor into running Mac OS X and another operating system (such as Windows) at the same time. As a result, running Windows under Fusion or Parallels is roughly 94 percent as fast as running Windows on a dedicated PC.

Both programs work the same way. First, you load the program on your Macintosh. Next, you must load an operating system such as Windows. Now you can open your virtual machine inside a Mac OS X window and run Windows inside.

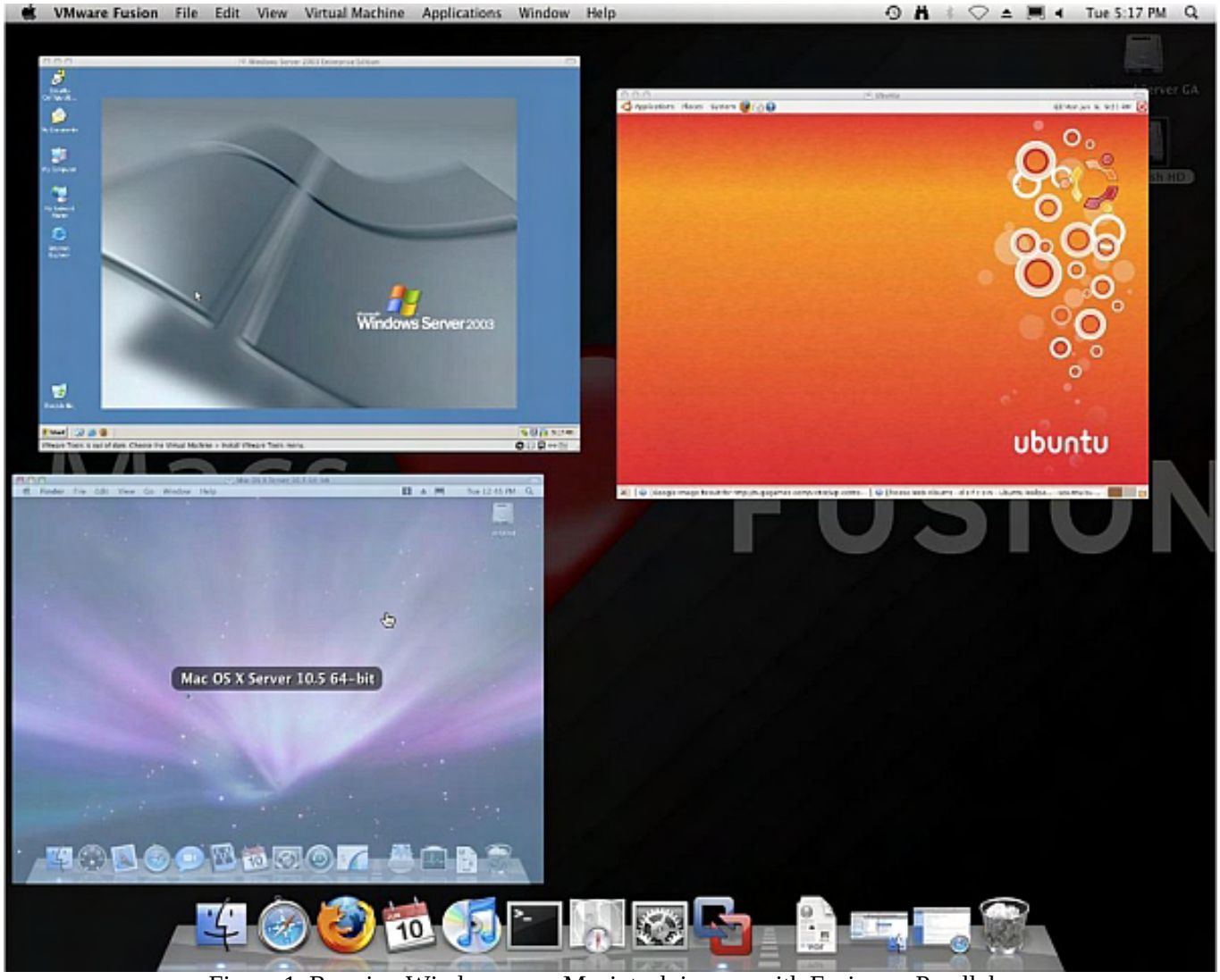

Figure 1. Running Windows on a Macintosh is easy with Fusion or Parallels.

There are two ways you can load Windows into a virtual machine. First, you can get a Windows installation disc and install Windows just as if you were installing it on a brand-new PC. Second, you can transfer your existing Windows PC hard disk, convert it into a virtual machine, and then copy that single virtual machine file on to your Macintosh, essentially cloning your PC to run inside of a Mac OS X window.

Once you have Windows running inside a Mac OS X window, you can cut and paste between Windows programs and Mac OS X programs. Both Fusion and Parallels even offer a unique feature that lets you store Windows program icons directly on the Mac OS X Dock. Now you can run Windows programs without having to look at the Windows Start menu or desktop at all.

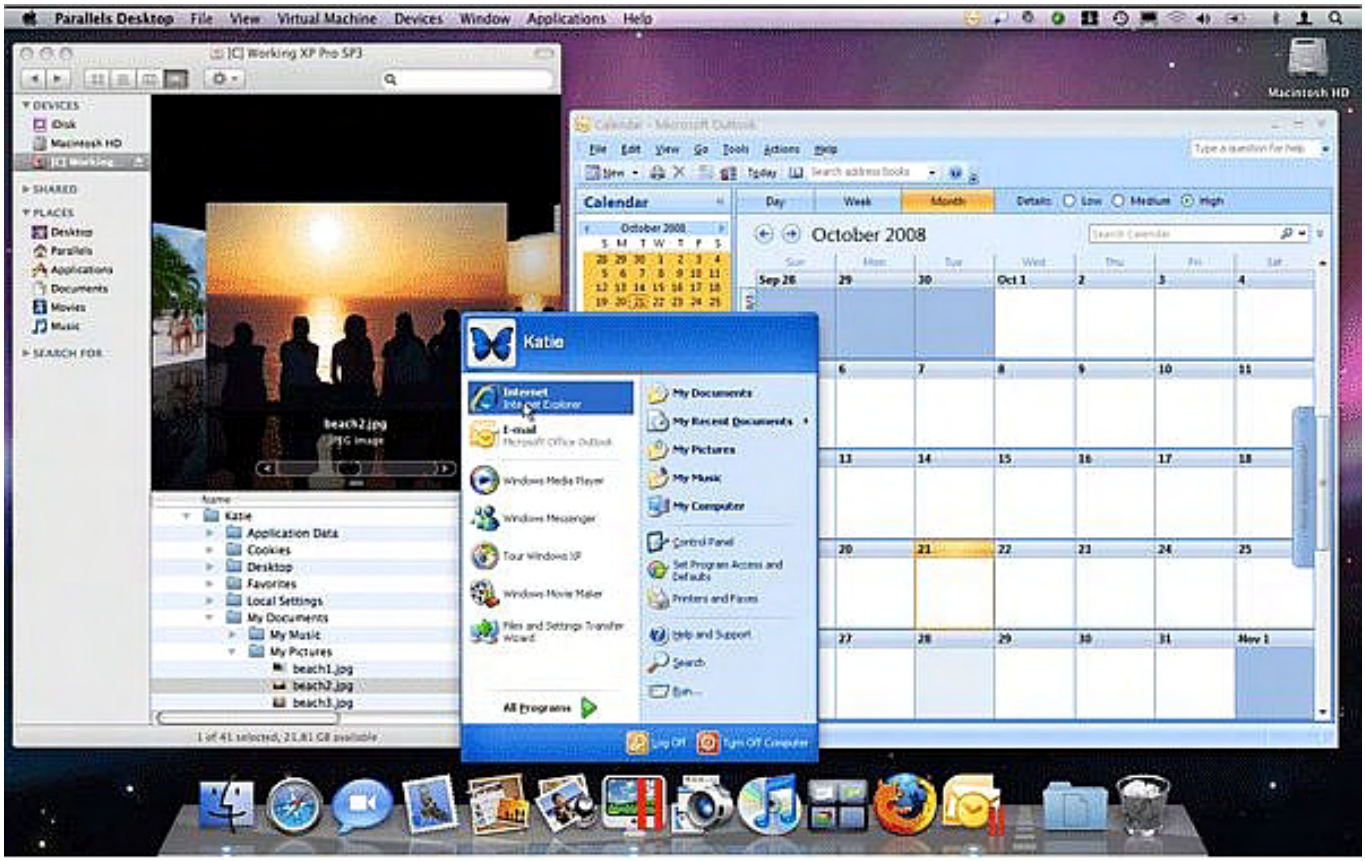

Figure 2. Windows can run seamlessly inside Mac OS X.

Although Fusion and Parallels are easy to use, they're definitely not designed for novices to install and use. If you've never installed Windows on a computer before, you probably don't want to start learning by using a virtual machine on your Macintosh. If something goes wrong, now you have to wonder if the problem lies with Windows (probably) or with your virtual machine software (Fusion or Parallels).

Since Windows hasn't built its reputation as a stable platform, both Fusion and Parallels offer a special SnapShot feature, which essentially saves your entire virtual machine settings. Now if a virus or other problem wrecks Windows, you can return back to your previous SnapShot and restore your Windows settings back to a time when everything worked just fine.

If you're trying to wean yourself away from Windows, Fusion and Parallels (both cost $79) can act as your security blanket. The more you use your Macintosh, the less you'll find yourself using Fusion or Parallels, so think of both virtual machine programs as training wheels to get you comfortable using Mac OS X until you're ready to break away from Windows for good.

The only reason I use Fusion and Windows anymore is to run specialized stock-trading software that's available only on Windows, or to run programs such as Microsoft Office 2007, which I need to write about for a book. Otherwise, Windows is about as useful to me as Mac OS 9 was on my old iBook.

* * *

On January 30, Apple warned its resellers that orders for iMac models would be held up. This is Apple's usual cryptic way of telling the world that it's about to refresh the iMac lineup, and possibly refresh its Mac mini lineup, as well.

Both the iMac and Mac mini are in dire need of an upgrade. For the price you pay for an iMac or Mac mini, you could get a generic PC with three or four times the amount of RAM and twice the hard disk space with a much

faster processor to boot. If you're in the market for a desktop Macintosh, wait until Apple releases the new models by February or March at the latest. If you buy an iMac or Mac mini now, you'll wind up paying way too much for an old model with obsolete equipment inside.

Keep in mind that Mac OS X 10.6 Snow Leopard should arrive by June. Since Snow Leopard is designed to take advantage of multiple processors, there's a good chance that the newest iMacs will be using quad-core processors. The speed increase of quad-core processors combined with Snow Leopard's ability to maximize the efficiency of multiple processors means that the newest iMacs will likely blow past the performance of any other Macintosh model on the market.

* * *

While you're using Safari, there's a good chance that certain Web sites will display advertisements in windows called pop-under windows. Unlike pop-up windows that display ads right on the screen (and annoy the heck out of you), pop-under ads appear only when you shut down all your browser windows and suddenly see an ad staring right back at you.

The main advantage of pop-under ads is that fewer people are likely to get rid of them right away, since these ads don't interfere with your browsing habits. There are two ways you can find and view these pop-under ads.

First, you can choose the Windows menu from the Safari menu bar and look for the list of open windows at the bottom. Now you can click on each pop-under ad window to see it.

Figure 3. Pop-under ads can be spotted in the Windows menu.

[Editor's Note: Do not be confused by the image (above) of the ComputorEdge *site.* ComputorEdge *does not do pop-up (or pop-under) ads.]*

Second, you can still click on the Windows menu to see all the hidden pop-under ads that might be buried on your desktop. Now choose Windows/Merge All Windows. This command takes all open windows and shows them as tabs in a single Safari window. Click each tab to see the window contents, and then click the Close button on each

tab that you want to shut down.

In the early days, before Wally became an Internationally renowned comedian, computer book writer, and generally cool guy, Wally Wang used to hang around *The Byte Buyer* dangling participles with Jack Dunning and go to the gym to pump iron with Dan Gookin.

Wally is responsible for *Microsoft Office 2007 for Dummies, Breaking Into Acting for Dummies, Beginning Programming All-in-One Reference for Dummies*, and *Mac All-in-One Reference for Dummies* from *www.dummies.com*, as well as, *Steal This Computer Book 4.0, Visual Basic Express 2005: Now Playing*, and *My New Mac* from *www.nostarch.com*. He is also the co-author of *Strategic Entrepreneurism* from *www.selectbooks.com*.

Every Saturday morning from 9:00 am - 10:00 am in San Diego, you can hear Wally with fellow co-hosts Dane Henderson and Candace Lee, on the radio show CyberSports Today (*www.cybersportstoday.com*), which covers the video gaming industry on ESPN Radio 800 AM. Wally covers the military history side of the video game industry.

When not performing stand-up comedy or writing computer books, he likes to paper trade stocks with the video game Stock Reflex (*www.plimus.com/jsp/download_trial.jsp?contractId=1722712&referrer=wwang*).

Wally can be reached at *wally@computoredge.com*.

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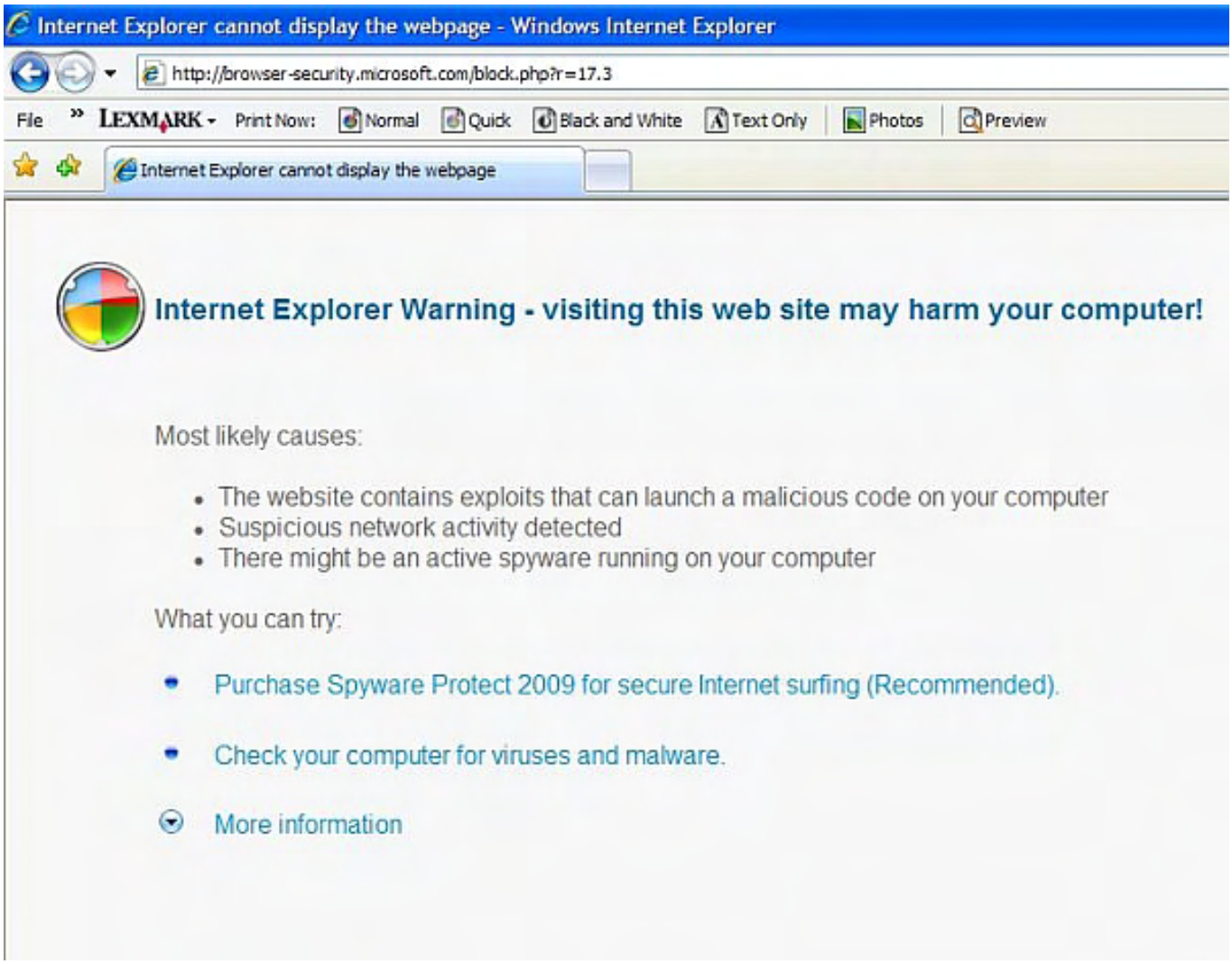
Web InSites

“The Continuing Malware Saga” by Dawn Clement

Dawn's unwanted visit with a Trojan horse leads to a discussion of malware — and what to do to protect yourself and your valuable personal information.

Well, folks, my malware saga continues. (See graphic below.) A few days after deleting my user profile, something calling itself "Spyware 2009" popped up on my screen. By this time, of course, I knew what it was and was at least partially prepared. I had installed a second browser (Firefox) and was able to use that to navigate to Malwarebytes (*www.malwarebytes.org/*) and download its removal tool. Unfortunately, I cannot install the tool itself—more than likely the malware is blocking the installation! I became curious about this software and did a little research on the subject, which I'm going to share with you now.

My computer was infected with a Trojan horse. Trojans are deceptive malware (malicious software) that often pretend to be something else in order to get you to install them on your computer (i.e., a DRM stripper). Trojans are executable programs—this means that your computer cannot become infected with a Trojan without some action on your part (for example, installing said DRM stripper). According to the 2008 E-Threats Landscape Report, prepared by BitDefender, more than 80 percent of the malware distributed worldwide is Trojans. Trojans are typically used to perpetrate information theft or for DoS (Denial of Service) attacks. Trojans have appeared on all platforms. In the past week alone, two variations of a Trojan targeting the Mac have been found bundled with pirated copies of Adobe Photoshop CS4 downloaded through BitTorrent.



"Every minute or so, a warning would pop up informing me that my computer was infected and encouraging me to register Spyware Guard 2008. Spyware Guard 2008 is a fake anti-malware application."

There are seven major types of Trojans: remote access, data sending, destructive, proxy, FTP, security-software-disabler and DoS. More than likely, if compromised, your computer will be infiltrated by more than one type of Trojan, as they work together to accomplish whatever goal the attacker has in mind. Remote-access Trojans give complete control over the infiltrated computer to the attacker (and can be used in conjunction with security-software-disabler Trojans and proxy or FTP Trojans), which can then be used by the attacker to carry out some nefarious end (such as sending out large quantities of spam, or launching a DoS attack).

A DoS attack is designed to bring down a specific network by flooding it with useless traffic. One infected computer isn't enough to do much damage to a network, and for this reason, most attackers "collect" compromised computers to form a botnet. A botnet is a network of compromised machines that can be remotely controlled by an attacker. These botnets can have tens of thousands of compromised computers ready to do some major damage.

The motivation for a DoS attack can be personal or political. A disgruntled employee, for example, may target the Web site of the former employer. Or political dissidents may target official government sites. Just this week, the Internet infrastructure of Kyrgyzstan was crippled by DoS attacks originating in Russia. This is not the first time political "activists" in Russia have targeted entire countries. In 2007, Estonia was crippled by a DoS attack, and in August 2008, the country of Georgia was similarly crippled.

Stolen information (such as credit card and Social Security numbers) is worth a lot of money on the black market. Trojans can be used to gather specific information, which is then relayed back to the criminal behind the infection.

They turn around and sell lists of information on the Internet. For example, Symantec conducted a yearlong study in which the company found that stolen credit card numbers were being sold online for up to $25 apiece. Last year, a ring of thieves was caught and convicted of stealing more than 40 million credit and debit card numbers. At $25 a pop, that's more than a trillion dollars in potential sales!

There is also a market for personal information. In 2006, Consumer Affairs reported that a full "ID kit" of a green card, photo ID and Social Security number sold for around $30 on the black market. That same year, according to the NY Times, there were approximately 7 million people working in this country using someone else's Social Security number. That's $210 million dollars worth of Social Security numbers. There is definitely money to be made selling information on the black market, and no end in sight.

No one wants their computer to be used for illicit purposes. You can take steps to protect your computer and your personal information.

Install antivirus software and keep it updated, but don't let it lull you into a false sense of security. New malware is being produced everyday, and antivirus software companies can't possibly keep up with all of them. (Note: You don't want to install more than one antivirus program at a time, as they can interfere with each other, but it's probably not a bad idea to have two or three laying around on disc just in case one doesn't clear the infection)

Be smart; don't install anything on your computer unless you are 101 percent certain that the source is trustworthy. Even then, exercise caution. Try to download files directly from the software developer's own Web site, not from another site claiming to have the file (they might have something else entirely).

Don't open e-mail attachments you did not request, even if they appear to be innocuous. Windows by default hides the last extension of a file, so that "picture.jpg" might actually be "picture.jpg.exe." You can easily change this setting in Windows Explorer, and protect yourself from unwittingly installing malware.

If your computer is already infected with a Trojan, your best bet is to do a clean install. This is really the only way to be certain that all traces of the Trojan have been removed.

Dawn Clement is a freelance writer, domestic engineer, and mother of three with a Masters of Arts in Philosophy and over nine years experience in technical support.

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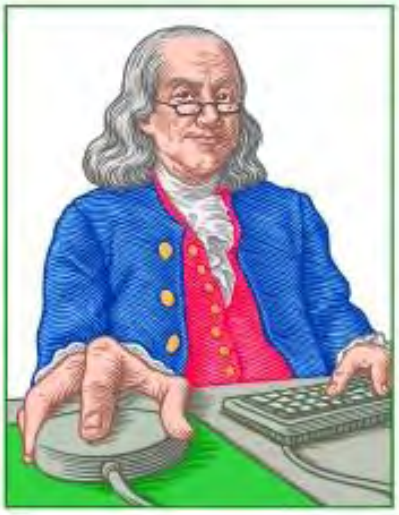

Little Linux Lessons: Tips and Tricks from Users

"Linux users share ideas and ask for help." by ComputorEdge Staff

Readers write in with advice for Scott, who last week voiced his frustration with running and learning Linux.

In Response to Frustrating Week (or Two?)

Last week, Scott voiced his frustration with Linux:

"Thanks for the responses on my Ubuntu questions. I must admit defeat. I have installed Windows Home Server and couldn't be happier. Everything is working great. I have not resolved my Linux issues. In fact, that is why I am writing, because as a computer user and Microsoft victim, I have issues with Linux."

[Scott continues...]

Richard and DJ help to put things in perspective:

Ease up, Scott. If you are really interested in learning Linux, contact an Ubuntu user group and they will gladly help you learn Ubuntu Linux.

Part of the difficulty of learning Linux is that it is different. It is not complicated, though. Because so many Linux users quickly learn how to use the command line to change a few files here and there to tweak their systems, those instructions are often archived in online forums, like the Ubuntu Forums. For a more comprehensive guide, check out a bookstore and you will find a large number of beginners books for Linux.

When software is developed by volunteers, the documentation is often the last thing that receives an emphasis, sadly. There are numerous opportunities for volunteer work in open source for writing tutorials. It's one more way to give back to the community.

Remember that when you say something like, "If people really wanted everyone to move away from Microsoft," that you are really stereotyping Linux users. Some may be primarily motivated that way, but most users that I know just find Linux to be a faster and cleaner solution for their own needs. It's not a crusade.

By the way, it took me more than two weeks to learn Linux!

Richard
Colorado

Reading Scott's post took me back to the frustration I felt when I first started tinkering with Linux last year. Not much seemed to work on my old Dell laptop after I put Ubuntu 8.04 on it. But little by little, using advice from forums, I was able to get the machine up and running.

There really are a lot of smart and considerate people out there who have no other agenda than trying to help. Unfortunately, there are also elitist types who like to smack around the noobs for the audacity of asking basic questions. So steer clear of them. Just the lay of the land, I guess.

After investing in a book or two, I really started to grasp key concepts. Now I've sampled a couple of other flavors of Linux and am happily running Slackware. My impressions of distros I've sampled so far: Ubuntu has very helpful community forums and Linux Mint probably ran the best right off the bat. Mint might be the friendliest starting point for a person coming from a Windows background. And Slackware isn't for the faint of heart.

I must admit, I've become somewhat of a command-line junkie in a short span of time. For me that's what Linux is all about—gaining proficiency and mastery of the command line. After all, that's where the real power is.

DJ Peters
North Richland Hills, Texas

Just a few more thoughts:

I definitely agree with Richard and DJ. The problem for many people is that the real power of Unix-like operating systems comes from working with the command line. Yet, with the design of Windows and the Mac, most non-Linux people have become accustomed to using only the "user-friendly" graphic interface. At first, looking at a command line is like staring at a blank wall. The map exists only in the mind of the user—except when there is an occasional peek with the ls command. Yes, there are plenty of GUIs available to make things more "user friendly," but if you're using the box as a server—or for many of the other excellent Linux applications—then the GUI often just seems to get in the way. If you haven't done it before, it takes a little while to get used to changing directories with the cd command.

I too found that books were a great help with my foray into FreeBSD (some of them Linux books). Although almost everything can be found somewhere on the Web, there is something comforting about an open book offering step-by-step instruction. At first, the change in terminology can be daunting, but little by little it begins to feel comfortable.

I use only the FreeBSD machines as servers. Partially because of the nature of my work, I use Windows machines for everything else. While I don't expect that Linux will take over the world, I'm relieved that it is there. It is an alternative to being trapped by Microsoft or any other operating system. Now when building up a new server, I need to consider only the hardware costs.

Jack Dunning
ComputorEdge

* * *

Looking for Some More Questions

*If you have an opinion on these or other Linux topics, then please let us know. Also, if you have another Linux tip that works for you and would like to pass it along (or have a question), please drop us a line at Linux Lessons (*ceeditor@computoredge.com*).*

This is a column for Linux and Unix-like operating system users. The goal is to give Linux users an opportunity to share tips, tricks and ideas with both fellow users and the *ComputorEdge* Linux newbies. Each week in this column, we will highlight the thoughts you submit to us. This is your column. As long as a submission is dealing with the Linux/Unix-like world, we want to share it.

The tips and tricks may be short or long, and can include graphics. If there is a little technique or program that you use on a regular basis, then we want to hear about it. You may also pose questions for other Linux users to answer. E-mail your ideas or questions to Linux Lessons (*ceeditor@computoredge.com*). Be sure to put the word "Linux Lessons" in the subject line so it won't get lost in junk mail. We depend upon you to make this column a success.

Jack Dunning
ComputorEdge

ComputorEdge always wants to hear from you, our readers. If you have specific comments about one of our articles, please click the "Tell us what you think about this article!" link at the top or bottom of the article/column. Your comments will be attached to the column and may appear at a later time in the "Editor's Letters" section.

If you want to submit a short "ComputorQuick Review", or yell at us, please e-mail us at *ceeditor@computoredge.com*.

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Rob, The ComputorTutor Does Programming for Visual Basic for Applications

"More Access VBA Programming" by Rob Spahitz

Last week, we started looking at how Access uses Visual Basic (VB) to help manage various things like forms. This week, we will explore a bit deeper into the VB world.

Last week, we started looking at how Access uses Visual Basic (VB) to help manage various things like forms. This week, we will explore a bit deeper into the VB world.

You can retrieve last week's database "Mailing List_20090130.mdb" from *www.dogopoly.com/ce*, where you can retrieve the two menus we created, one with a Close button created using the wizard and the other with an Open button also created using the wizard. Last week we explored the code that made the Open button work. Let's quickly review that, and then move on to the Close button.

First, under the Forms objects, open frmVBA_Test1 in Design view. Click on the Open button and, in the Properties window, under the Event tab, click on the "On Click" property (which will show "Event Procedure"); click on the "..." button next to it to see the code in the VB window. Note that a quick way to get VB applications is to press Alt-F11; however, you won't necessarily be at the correct location and will have to navigate through the VB project window to find the form, and then scroll down to find the code.

The VB code for that button is this:

```
Private Sub cmdLookup_Click()
On Error GoTo Err_cmdLookup_Click
    Dim stDocName As String
    Dim stLinkCriteria As String
    stDocName = "frmVBA_Test2"
    DoCmd.OpenForm stDocName, , , stLinkCriteria
Exit_cmdLookup_Click:
    Exit Sub
Err_cmdLookup_Click:
    MsgBox Err.Description
    Resume Exit_cmdLookup_Click

End Sub
```

The first line defines that this is a new subroutine (procedure) named cmdLookup_Click. Between that and the End, it first enables "error-trapping" to jump to the VB label named Err_cmdLookup_Click if it finds an error as it continues processing.

Next are two lines starting with Dim, which creates variables used to help it process things later. And the next line assigns a value to one of those variables.

The last important command is DoCmd, which actually asks Access to perform the OpenForm command which,

obviously, will try to open a form.

Close It

Now that we've looked at the code that the wizard created for Open, let's see what it did for Close.

Return to Access and open frmVBA_Test2 in Design mode. Using the method above, go to the VB code for the Close button. It should look like this:

```
Private Sub cmdClose_Click()
On Error GoTo Err_cmdClose_Click
    DoCmd.Close
Exit_cmdClose_Click:
    Exit Sub
Err_cmdClose_Click:
    MsgBox Err.Description
    Resume Exit_cmdClose_Click

End Sub
```

When you compare this to the code for the Open button, you can see that the wizard created has very similar code for closing a form. There are really only two differences. One is that there are no variables used; the other is that DoCmd uses "Close" rather than "Open." And Close, by default, will close the current form. Since Access knows the current form, it doesn't need any extra information from you as it did with the Open command.

OK, so this is pretty much how the wizard handles these things. How would I handle it if I wanted to do this? Well, first of all, the wizard actually did a decent job with these things. A few things you want to consider when you create a subroutine are:

• What are you trying to achieve?
• Are there any easy ways to achieve that goal?
• Are there any special requirements needed to achieve that goal?
• Is there any chance that something can go wrong, i.e., could an error occur anywhere along the way?

In our case, what we're trying to achieve with the Close command is to show an Access form. The easy way to achieve that is to add some simple code to a procedure. So you could have created this to get the same effect:

```
Private Sub cmdClose_Click()
    DoCmd.Close
End Sub
```

Why didn't the wizard do this? Well, the wizard, as with many things in Access, tries to be overly cautious. It adds extra things to ensure that any failures are properly managed. However, I've never found any way that the form would not close, so the error-trapping that was added here was probably unnecessary. However, it has very minimal impact so it doesn't hurt to leave it in. It also means that if you ever add more code to this procedure, you wouldn't have to add the error-trapping code.

Now let's look at the Open procedure. We could scale it down like this:

```
Private Sub cmdLookup_Click()
    DoCmd.OpenForm "frmVBA_Test2"
End Sub
```

That's quite a bit less than what the wizard created. Let's see what we lost.

First, we lost error-trapping. Is it possible that the form name shown inside quotes doesn't exist? Or is it possible that the form cannot be opened for another reason? You bet! The above code is quite risky. Without error-trapping, you're simply letting Access figure out what to do with this. In the most extreme case, Access would let Windows figure out what to do, which could mean shutting down your database. This doesn't usually happen, but even letting Access handle this is not a good choice, since the message you get will probably be inadequate.

OK, so you can restore the error-trapping (which I personally would format and name a bit differently, but otherwise it's fine.) Here's my version:

```
Private Sub cmdLookup_Click()
    On Error GoTo cmdLookup_Err
    DoCmd.OpenForm "frmVBA_Test2"
cmdLookup_Exit:
    Exit Sub
cmdLookup_Err:
    MsgBox Err.Description
    Resume cmdLookup_Exit
End Sub
```

Now what about the variables (Dim statements) that the wizard put in? First of all, one of those variables (stLinkCriteria) was not used in this context. If you used a different feature in the wizard, then it would be used. Since that wasn't supplied, the wizard should not have created that part of the code.

As for the other variable, stDocName, that's a convenience in case your form name is very large or if you want to easily change the name, or if you wanted to do other special things later. In our case it's not really needed; if you enhanced the code later and needed that, then you could put it in.

Code Organization

Now that we've explored the things the wizard did, let's start to look ahead. Most likely, we will be creating other buttons that point to other forms. If we use the wizard, each one will have code similar to the one created by this wizard. The only difference will be the name of the form you want to open. So rather than have it create all of that code, we could create our own procedure that looks like that, then have all of the others call our custom procedure.

Let's assume that we want to create our own subroutine called OpenForm. It might look like this:

```
Private Sub OpenForm()
    On Error GoTo OpenForm_Err
    DoCmd.OpenForm "frmVBA_Test2"
OpenForm_Exit:
    Exit Sub
```

```
OpenForm_Err:
    MsgBox Err.Description
    Resume OpenForm_Exit
End Sub
```

This procedure will do that same thing that we had with our original button. The only problem is that Access has no way to call it right now. Since Access uses event-driven processing, when you add a button to a form it will run only VB code that is attached to an event. So let's update the original Click event, and rather than have it call the wizard's code, let's have it call our code:

```
Private Sub cmdLookup_Click()
    Call OpenForm
End Sub
```

First, is this a simple way to achieve our goal? You bet it is, as long as the procedure named OpenForm does its job. This will be the key to computer programming as we move forward: If you can name a process, create a subroutine for it and "modularize" things.

Quick aside: How many of you read instruction manuals? What if you had a computer tool that was incredibly intuitive? Would you need to read the manual? Well, computer code is often complex and needs little notes (called comments) to help the programmers to better understand what is happening. The problem is that programmers hate to document things. And if the computer code changes, those comments rarely get updated. A much better way to "document" your code is to make your code self-documenting. If the words you use for your procedures are the words you use in your documentation, you don't need your documentation! (Well, you need less, anyway, and you rarely need to update things.) For this reason, I like to use variables that self-document, and often create new procedures to make my code self-documenting.

By the way, as mentioned in a previous column, the word "Call" is optional, so we could simply use:

```
Private Sub cmdLookup_Click()
    OpenForm
End Sub
```

Parameters

This subroutine is great for that one form, but gives us limited value. Every time we want to open a form, we would either get that one form or we'd have to create a new subroutine for each form, which the wizard could do more easily. However, we can tell the subroutine to accept some information, such as the name of a form. To do that, we tell the procedure to accept parameters. To add parameters, you simply put a name inside parentheses after the subroutine name. Since the incoming information might be of a specific type of data, like text, you typically add that too, like you do with the Dim statement.

Here's an improved version:

```
Private Sub OpenForm(FormName As String)
```

This requires that any code that uses the OpenForm subroutine must also send it some text.

Back to our button, we can now change the procedure to look something like this:

```
Private Sub cmdLookup_Click()
    OpenForm "frmVBA_Test2"
End Sub
```

Do we need error-trapping? Not really in this case. Our command really cannot fail by itself. If you omit the name of the form, that's a syntax error that Access will intercept regardless of any error-trapping code you add. And if a bad form name is supplied, the OpenForm subroutine will trap that. So at this point, error-trapping is not needed here.

We're almost done. Now we have a subroutine that lets us easily open a form of our choice, as long as we know the name of the form.

The one part that's missing is that the OpenForm subroutine still opens the same original form. However, since the parameter (which is really just a variable) tells us what to open, we can simply ask the parameter to give that information to the Open command like this:

```
    DoCmd.OpenForm FormName
```

Putting it all together, the form's Open button will look like this:

```
Private Sub cmdLookup_Click()
    OpenForm "frmVBA_Test2"
End Sub
```

And since OpenForm was not created yet, we need to define it, like this (probably best at the end of the page):

```
Private Sub OpenForm(FormName As String)
    On Error GoTo OpenForm_Err
    DoCmd.OpenForm FormName
OpenForm_Exit:
    Exit Sub
OpenForm_Err:
    MsgBox Err.Description
    Resume OpenForm_Exit
End Sub
```

Now if we added a new button to open a new form, like frmState, you would simply do something like this:

• Create a button on the form
• Define a procedure for On Click
• Add simple code to open that form

It might look something like this:

```
Private Sub cmdStateLookup()
    OpenForm "frmState"
End Sub
```

It's that simple once the work is already done. This is what the object-oriented world is all about, and we carry that concept into our code. Make code reusable and flexible, and your job gets easier.

Next week, we'll explore Access 2007 before we jump into lots more related to VB programming.

Rob has been in the computer industry for over 25 years and is currently a part-time teacher, offering classes in Excel, Access, Visual Basic, and a variety of other technical tools. He has loved *ComputorEdge* since 1990 and can be contacted at *RSpahitz@Dogopoly.com*.

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EdgeWord: A Note from the Publisher

"Web vs. Desktop Apps: All or Nothing?" by Jack Dunning

As we dig into the decision about moving to Web applications or sticking with computer-installed programs, will it be an all-or-nothing decision or a hybrid?

Last week, I received the following note from Paul Anthony:

"Thanks again for your Zine. I am wondering if you can bring two of this week's articles together for me? The first is the one that is titled 'Moving into a Virtual Office.' The second is your article about changing file associations. I am wondering if there is a way to double-click a filename.doc that is on my desktop, and then have it open up in Google Docs?"

While the question seems fairly straightforward, it brought up a number of issues for me. First, how will Web applications such as Google Docs work with all the various operating systems? How will they deal with requests, such as Paul's, that are operating-system specific?

Second, as we dig into the decision about moving to Web applications or sticking with computer-installed programs, will it be an all-or-nothing decision or a hybrid?

Third, as computers grow more powerful, as they always have, do we really want to deal with the relatively slow (even with broadband speeds) bottleneck called the Internet?

First, Paul's Question

The exact question Paul raises is being debated at Google. The problem is that since Google Apps is Web-based, it does not reside on your computer. The primary purpose of Google Apps is to make users operating system independent—a poke in the eye for both Microsoft and Apple. In order for file associations to open a program, there needs to be an application (if only a mini-app) on your computer. That means programs will need to be written that respond to the operating system. This is a bit of a dilemma for a company that has always been operating system independent.

A quick search of the Web did yield one or two third-party programs for linking to Google Docs, but that's the same solution as adding software to your computer. You can create shortcuts that will link to your individual Web documents, but then you would need a shortcut for each document. The other side of the problem is that the data files do not reside on your computer unless you download them.

Computers or the Internet?

This brings us to the first issue of operating system independence for Web applications. While there may be many people that want to trust all of their files and applications to the Internet, I suspect that most people will use Web-based programs only as a convenience. When the Internet is not available, the files and applications will not be available. If we are traveling or our ISP is temporarily down, we want to continue our computer work.

This means we will continue to want applications and copies (at a minimum) of our data on our computer. We will not become operating system independent, because we don't want to give up our Internet independence. It wouldn't be prudent.

This answers the second question of operating system, Internet or both. We will continue to invest in our Microsoft and Apple software while taking advantage of the convenience and productivity that we can get from Web-based

applications and online data storage. Computing will be a hybrid process of local computing operations plus remote Web data and applications. Issues such as file syncing between machine and cyberspace will be foremost. The truth is that we want it all—and we will get it all, even if it causes a little confusion.

The third key point is that the Internet is too slow to take on the task of being our primary computer. The rate at which our hardware grows in power and capacity far outstrips any increase in available Internet bandwidth. Compared to the power of today's computers, the Internet is a problematic bottleneck.

Our computers and the Internet are tied at the hip. They are both an integral part of the computing system that we use on a daily basis. The Web will not turn the computer into a smart terminal for accessing work and the world—nor will computers (and their operating system) ever again be the sole computing entity unto itself.

Jack is the publisher of *ComputorEdge* Magazine. He's been with the magazine since first issue on May 16, 1983. Back then, it was called *The Byte Buyer*. His Web site is *www.computoredge.com*. He can be reached at *ceeditor@computoredge.com*

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Editor's Letters

"Readers write in with letters to the editor." by ComputorEdge Staff

"BitTorrent Basics Article," "More on BitTorrent," "Can You Really Trust Tax-Prep Software?," "Tips for Digital Dave and Chalmers Kerr," "Windows 7 on the Horizon," "ISPs and the RIAA"

BitTorrent Basics Article

[This letter is in regard to Michael J. Ross' January 23 article, "BitTorrent Basics."]

I liked this article as it provided some details about the P2P software and related issues of using such a tool to obtain various media.

I don't find many of your articles that interesting—this was.

-DWM, Temecula, Calif.

More on BitTorrent

[This letter is in regard to Michael J. Ross' January 23 article, "µTorrent for Sharing Files."]

This is my second comment about [the BitTorrent issue].

This (plus the other article) are good subjects. I like getting topics that are more than fluff (mainly marketing) and now the things just included in Smart Computing or PC World (I get both along with Videomaker).

-Don McLaughlin (Video Don), Temecula, Calif.
Also member of TVCUG & TVSG

Can You Really Trust Tax-Prep Software?

[This letter is in regard to Michael J. Ross' January 16 article, "Income Tax-Preparation Software."]

For well over a decade, I have been preparing my own taxes using Excel spreadsheets that I update each year with new values, such as standard deduction and exemption amounts. (Relatively simple tax situation, i.e., wages, interest, dividends, capital gains.)

In recent years, I have used online free tax-preparation software to crosscheck my calculations. In every case, even after catching mistakes on my part, such as transposing two digits in a number or adding a figure instead of subtracting, there was some remaining discrepancy between my results and the tax-prep figures. And mine were right.

The most common tax-prep software mistake has been incorrect rounding. Fortunately for those using such software, this leads to a tax-due bottom-line error of a couple of bucks, too small for the IRS to waste time pursuing. But I'll continue to use my own spreadsheets, thank you.

-Stewart A. Levin, Centennial, Colo.

Tips for Digital Dave and Chalmers Kerr

[The following letters address the January 23 Digital Dave column, where reader Chalmers Kerr wrote in about experiencing a strange startup problem after adding RAM.]

I had a similar problem with a system after adding RAM. It turned out to be a power supply that fixed the problem.

-Steve, Dulzura, Calif.

I read about Chalmers Kerr's problem following a RAM upgrade. I had a similar problem a few years ago with my ancient HP Pavilion. I upgraded the RAM from 256MB to 512MB. When I rebooted, the CPU did not recognize the new RAM. I was given the option to run with only 256MB of RAM, so I could still use my machine. I discovered I needed to update the BIOS to the most recent version.

Once I did this, all was good.

-Manny, San Diego, Calif.

Chalmers could try updating the BIOS of his Compaq; perhaps a BIOS upgrade would fix the stall-out issue; or maybe change the halt on errors to NO in the BIOS as well.

-Joe Vent, San Diego, Calif.

Windows 7 on the Horizon

[This letter is in regard to Jack Dunning's January 23 Windows Vista Tips and Tricks column, "Windows 7 on the Horizon."]

I read with interest your article about Windows 7. You mentioned how many features currently found in Vista aren't included in the core of Windows 7. I heard rumors last year about Microsoft introducing a more modular OS more in line with Apple's.

Do you see any indication of this, or is it just a case of selective exclusion of certain low-interest components? I am really interested in Windows 7 as our next OS upgrade here at work instead of Vista. I can't help the feeling that Vista was more of a stop-gap release, much like Windows Me.

Keep up the good work, and I will continue to read your articles in *ComputorEdge* every week.

Sincerely,

-Duane Hendrickson

[My feeling is that Microsoft has two goals for Windows 7 (other than fixing Vista). One is to move Windows users toward the Web with Windows Live, and the other is to remove less popular features that add to the bloat. —Jack Dunning]

ISPs and the RIAA

This letter is in response to the [January 23] article by Dawn Clement regarding BitTorrent, the RIAA, and ISPs, ["BitTorrents vs. the RIAA—and Your ISP."]

My carrier, Cox Communications, is definitely cooperating with the RIAA, since I got a "cease and desist" letter from the RIAA via Cox. The only problem is that I use pay sites to download music and I do not use any torrents. I could not respond to the letter through Cox and have to write directly to the RIAA. Very cowardly of Cox to send

this letter then hide behind the RIAA. This has become the main reason I will drop them; there were other reasons, but this is more like the straw that broke the camel's back.

-Phillip E. Banks, San Diego, Calif.

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If you want to submit a short "ComputorQuick Review", or yell at us, please e-mail us at *ceeditor@computoredge.com*.

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