How Do I Back Up My Drivers?

Lincoln Spector, PC World

Sep 23, 2008 10:03 am

First, you should know that there are no guarantees. I've yet to find a technique that always gets every file needed by every driver. But I can recommend two approaches, either of which will get the vast majority and quite likely all of them. As an extra precaution, you might use both.

The first is driverback.bat, a batch file I wrote when I last answered this question in 2005 (if that link brings you to a web page of text rather than a file download dialog box, copy and paste that text into Notepad and save it as **driverback.bat**). This makes for an extremely easy backup and a reasonably easy restore, although it backs up far more files than you're likely to need. Another problem: It doesn't work in Vista--one more reason why I'm giving an alternative solution.

Running my batch file copies a great many files to a folder inside My Documents called driverback. Copy this folder to an external drive or burn it to CD for safe keeping.

To restore your drivers to a fresh XP installation, connect or insert the media containing your driverback backup. Select *Start, Run,* type **sysdm.cpl**, and press **ENTER**. Click the *Hardware* tab, then the *Device Manager* button.

Repeat the following steps for each item listed that displays a yellow question mark:

1. Right-click the item and select *Update Driver.*

2. In the resulting Hardware Update Wizard, select *Install from a list or specific location (Advanced)* and click *Next.*

3. Check *Include this location in the search* and point it to your driverback folder. Click *Next*.

4. If the installation pauses because it can't find a file, point it to your driverback folder.

If you're using Vista, don't trust my admittedly crude batch file, or just want two backups, consider Innovative Solution's free DriverMax (http://www.innovative-sol.com/drivermax/). (Free, yes, but you still must register it if you wish to keep using it.)

Once installed and registered, it backs up and restores drivers with almost no fuss.

Email your technology questions to me at answer@pcworld.com, or post them to a community of helpful folks on the PCW Answer Line forum.

What to Do When Windows Gets Really Messed Up

Lincoln Spector, PC World

May 5, 2008 10:00 pm

"To err is human," the old joke goes. "But to really mess things up requires a computer."

This *Answer Line* collection concentrates on the absolute disasters of Windows computing--the problems that threaten your PC, your career, and your peace of mind. Here's what to do when Windows throws the dreaded Blue Screen of Death your way, and how to restore your OS even if you've lost the original restore CD.

To regain some of your own peace of mind, join the community in our Answer Line forum or send your technology questions to answer@pcworld.com.

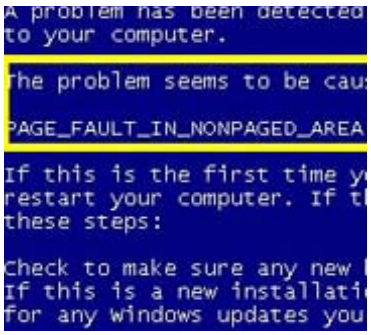
Why Does My PC Keep Dying With a Blue Screen of Death?

Gael Busson, Montreal, Quebec, Canada

What's worse than the sudden, unexpected appearance of a blue screen filled with white text? Recurring appearances of blue screens filled with white text. The fewer times you have to read the maddeningly passive-voice observation "A problem has been detected and Windows has been shut down…," the better. Microsoft calls these freeze-frame moments "stop errors," but everyone else uses a much more descriptive title: The Blue Screen of Death (BSoD). They occur whenever Windows senses a problem that won't let it operate properly.

When you encounter a BSoD, there's not much you can do except mourn your lost data (whatever was in memory but not yet saved to disk), reboot your machine, and go on with your life. If you start getting them regularly, however, you have a problem that must be addressed.

The question is, what's causing the problem?

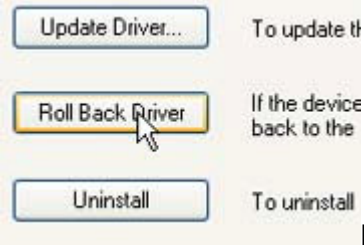


Believe it or not, BSoD screens actually contain some useful information--albeit not much. The next time your monitor and mood suddenly turn blue, grab a pen and a sheet of paper and jot these items down before rebooting:

• **The problem description:** Write down whatever text appears between the boilerplate first paragraph ("A problem has been detected…") and the one that begins "If this is the first time…"
•???**Technical details:** Write down everything that appears under the heading 'Technical information'.

Once you've rebooted, use your favorite Internet search engine to find pages that mention both BSoD and some of the terms that you jotted down. The statement in all caps with underlines instead of spaces will likely be useful here.

If a Web search doesn't yield helpful information, ask yourself what has changed on your PC lately. Did you add hardware or update a driver just before the problem became common?



Bad drivers often give Windows the blues. If you recently updated a driver, try reverting to an older version. Here's how:

1. ??? Select *Start, Run* (in Vista, *Run* is enough), type **devmgmt.msc**, and press **Enter**.
2. ??? Double-click the device in question, click the *Driver* tab, and then click the *Roll Back Driver* button.

Conversely, if you recently added new hardware to your system, installing a more recent version of the driver may fix the problem. Check the vendor's Web site to see whether there's an update.

A bad RAM module is another potential cause of BSoDs. You can test your modules easily with Memtest 86, a free program downloadable at Memtest.org. Memtest isn't a Windows program, and you must boot it before running it. You can download it as a CD image .iso file. Nero, Easy Media, and other disc-authoring programs can easily burn this .iso file into a bootable CD. Once you've burned the CD, boot and see whether Memtest finds any problems.

Overheating is another common culprit. Check your computer's air vents for blockage. If you have a desktop, open it and use an air canister to remove any dust you find. (If you have a laptop, check with your vendor to see whether you can clean out dust without resorting to professional intervention.)

And while your desktop is open, check the internal connections to confirm that all of them are firmly attached. A loose connection is yet another possible cause of Blue Screens of Death.

As with virtually every other major Windows problem, the fault may lie not in your hardware, but in your Registry. If you can, use System Restore to return that great compendium of necessities and problems to the state it was in on a date before the problem arose.

Or you can try running a Registry cleaner. As I have in the past, I recommend ToniArts' free EasyCleaner and ChemTable's $40 Reg Organizer for this purpose.

If all else fails, back up your data and take your PC to a professional. It's OK to admit that you can't fix some things yourself.

How Do I Restore Windows If I've Lost My Restore CD?

Conflict34, Answer Line Forum

When Windows misbehaves and nothing else works, restoring the operating system via your restore CD or hidden hard drive partition may be the last resort. So what do you do if you can't find that CD? Or if some program that wrote to the boot sector scrubbed the special keyboard sequence for recovering everything, so that it no longer works?

Video: How to Reinstall Windows XP

The first thing to do is get in touch with your system's manufacturer and find out its policies. In most cases, some option will be available. I checked with six PC manufacturers, and five of them (Gateway, HP, Lenovo, Micro Electronics, and Micro Express) will sell you a recovery CD for between $15 and $40. Recovery media may not be available for older PCs, however. Also, several companies include software on their PCs for creating a new recovery disc.

The sixth PC manufacturer I consulted, Dell, has no stated replacement policy. But even here, my contact told me, the company tries to "encourage customers to call when this happens."

If consultation with the vendor doesn't work out, you might be able to create an installation CD from files on your PC. See "Create a Windows CD for PCs That Don't Have One" and "Slipstreaming Service Pack 2 on an Old Windows XP CD" for details. But be warned: These methods aren't guaranteed to work.

If your copy of Windows is currently in good working order, but you worry that you don't have a recovery tool and that someday you'll desperately need one, create your own with a good backup program. The resulting recovery disc is arguably better than a factory-issued backup tool, because it will restore a version of Windows that includes all of your personalized settings.

You'll need a backup program with good disaster-recovery capabilities. Image-based backup programs such as Symantec's Ghost and Acronis's True Image do nicely. I'm partial to Genie Backup Manager, which doesn't use images but still reliably restores Windows. You may already own a simple image backup app; such programs come with Vista's Business, Enterprise, and Ultimate editions; with Nero Burning; and with several external hard drives.

The trick is to make a single image or disaster recovery backup of your drive (I have yet to find a program that can create a reliable backup of everything except your data; when I find one, I'll let you know) and then put it aside. You should also, of course, create regular daily backups with the same program or another one, but you should keep your recovery backup separate from these, in a place where it won't be overwritten.

When Windows becomes too broken to fix, restore it from your recovery backup, and then restore your more recent data from a recent data backup.

See the PC World forums for the original discussion on this topic.

Create a Windows CD for PCs That Don't Have One

Lincoln Spector

Sep 24, 2005 1:00 am

My new laptop came with a recovery disc but not with a stand-alone Windows XP CD. What can I do?

Abdul Hamid, Denver

Microsoft requires that every PC bundled with Windows provide some way of restoring the operating system, but too many bundled Windows XP "restore" CDs merely return your hard drive to its factory condition, which wipes out all of your data and any apps you've added.

Fortunately, vendors appear to be moving away from these data-wiping recovery discs. I recently looked at new PCs from ABS, Dell, Gateway, Lenovo, and WinBook, all of which came with either a real Windows XP CD or another way to perform nondestructive OS reinstalls.

If your PC lacks a Windows CD, a folder named 'i386' containing the Windows installation files is probably in the root directory of drive C: or in your C:\Windows folder. Your system may have several i386 folders, but the one you want has a lot of files with extensions ending in underscores (_), along with the executable files expand.exe, regedit.exe, and winnt32.exe. Copy this folder onto a CD for safekeeping, though you'll use the version on the hard drive to actually reinstall Windows.

Keep your 25-character Windows Product Key handy--you'll need it to reinstall the OS. The number is on the back of your PC, on the bottom of your notebook, or in some other hard-to-read spot; it may be listed in the documentation as well.

You'll also need a bootable CD for starting the install process. Bart Lagerweij's free PE Builder creates a CD-bootable version of XP called Bart's Pre-install Environment, or BartPE, from either a Windows CD or the i386 folder. Click here to download PE Builder.

Open PE Builder's main dialog box and select the folder or drive containing your i386 folder, but not the folder itself. Check *Create ISO image*, click *Burn to CD*, and select your CD-RW drive from the Device drop-down menu. If PE Builder doesn't support your burner, double-click the PE Builder--created .iso file to launch your CD authoring program and burn the CD.

To reinstall Windows, boot from the BartPE CD you just created and select *Go, Programs, A43 File Management Utility* (see Figure 1). Navigate to the hard drive's i386 folder (do *not* use the i386 folder on the CD). Double-click *winnt32.exe* to start the installation process. When the installation program closes, reboot your PC, remove the CD, and select *Microsoft Windows XP Setup* from the resulting boot menu. The installation will pick up where it left off.

Opaque or Transparent Desktop Text?

I fiddled with some Windows settings, and now all the icon names on my desktop appear in a block of color rather than on top of the desktop wallpaper. How do I revert to showing the icon names' transparent background?

Joshua Fisher, Newport News, Virginia

Some people like their wallpaper showing through the letters; others hate it. To change this setting in Windows XP, right-click *My Computer* and select *Properties, Advanced*. In the Performance box, click *Settings*. Check or uncheck *Use drop shadows for icon labels on the desktop*. Click *Apply* to see if you like the results. When you're satisfied, click *OK* twice.

No other version of Windows offers this icon-label option. If you use another Windows version and don't like the resulting color blocks behind your icon names, check out Transparent, a free program by Jay Guerette that makes your wallpaper shine through. Click here to download your copy.

Make a DOS App Work With a USB Printer, Again

A number of readers weren't satisfied with my advice from last June's column for printing from an old DOS program to a new USB printer, and they were right. I concentrated on parallel versus USB port issues. A bigger difficulty is that many of today's printers don't understand DOS commands. The $20 DOS Printer shareware program solves this problem by running in the background, looking for any printer instructions headed for LPT1. When it gets these instructions, it converts them into something Windows--and your real printer's driver--will understand.

Send your questions to answer@pcworld.com. Answer Line pays $50 for published items. You'll find Contributing Editor Lincoln Spector's humorous and other writings at www.thelinkinspector.com.

Diagnose and Repair an Unbootable XP or Vista PC

Lincoln Spector

Nov 3, 2007 1:00 pm

How do I prepare an emergency boot disc so I'm ready in case Windows becomes unbootable?

Paul Lopez, Allentown, Pennsylvania

Alas, the days when Windows came with a program for creating a useful emergency boot floppy are long gone. And those old boot floppies wouldn't help with XP or Vista--even if you PC had a floppy drive.

Boot from one of the discs that came with your PC, and examine the menus (don't select anything that might wipe your drive). You're looking for emergency utilities.

You're in real luck if you have a full Windows XP CD or Vista DVD. These come with great tools for diagnosing and repairing an unbootable PC. In fact, if you don't have a real Windows disc, find one you can borrow in an emergency. Don't install Windows from a borrowed disc, but if it has the same version of Windows as your PC, use its repair tools.

Boot from an XP CD, and press `R` at the 'Welcome to Setup' screen to see the Recovery Console, a DOS-like command-line environment with a number of useful utilities. Consult "What to Do When XP or 2000 Won't Boot" for additional details.

If you boot from a Vista DVD, click *Repair your computer* to open the System Recover program. There you'll find options to automatically fix boot problems, restore your hard drive from an image backup, diagnose memory, or perform a system restore.

If you're ready for a Windows alternative, try Puppy Linux, which you can download as a ready-to-burn .iso file from the Puppy Linux Web site. Boot from the CD, and you'll have a nongeek's version of Linux running on your PC. Puppy Linux is the best tool I've found for one extremely important job: copying important files off an unbootable hard drive. Unlike UBCD4Win, Puppy recognizes USB drives, making it extremely easy to put these files where you can readily access them.

The XP CD's Boot Tool Kit

Enter these commands in Windows XP's Recovery Console to perform CPR on your disks and files.

- See more like this:
- boot disc,
- xp diagnostics,
- emergency utilities,
- pc repair

Six Downloadable Boot Discs That Could Save Your PC

When the worst-case scenario actually happens, downloading the right rescue disc can save your hide, and your data.

Lincoln Spector, PC World

May 7, 2008 5:00 pm

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Way back in the 20th century, Windows prepared you for the day your PC wouldn't boot. It came with a program that formatted a bootable floppy disk, complete with diagnostic and repair utilities. If you had the forethought to create that floppy while Windows was still working, you were ready when it eventually failed.

Alas, the Windows Boot Floppy went the way of DOS (the operating system it actually booted). Modern versions can't make that floppy (they can format a bootable DOS floppy--if you have the drive--but without utilities), and DOS can't handle NTFS hard-drive partitions.

Since Microsoft doesn't supply you with the ability to create an emergency boot disk, others have stepped in to fill the vacuum. Here are six worthwhile emergency boot CDs, all downloadable, and most of them free.

Yes, I know you can't download a CD. Most of these packages come as .iso files--easily burnable disc images. If you double-click an .iso file, there's a good chance that a program you already own--perhaps Nero Burning or Easy Media Creator--will come up and burn it to CD. If that doesn't happen, download and install ISO Recorder.

Know Your Rescue OSs

Since DOS doesn't handle XP or Vista repairs well, each of these discs boots into one of the following three operating systems. It's good to know a little about them.

Windows PE: The official, CD-bootable version of Windows (the PE stands for Preinstallation Environment) makes the obvious choice for this sort of thing. Unfortunately, Microsoft maintains strict control, and few utility authors have received permission to use it.

BartPE: Since Microsoft won't share its preinstallation environment, Bart Lagerweij created his own, and he gives it away for free. But to avoid copyright infringement, he can't give you everything you need to create a BartPE disc. The missing elements consist of Windows XP installation files you may or may not already have.

Linux Live CD: The name refers to any version of Linux you can download as an .iso file and boot off a CD. But Linux can be an intimidating environment for the uninitiated, it doesn't always handle NTFS well (many versions can read NTFS but not write to it), and it is seldom geared to help with Windows problems.

The Six Great Rescue Discs

So let's get on with it. I'll start with discs that simply give you access to the files on your hard drive, and work my way up to the powerhouses that can diagnose and repair most boot problems.

Puppy Linux

If Windows won't boot, nothing gets you into your hard drive faster or more easily than Puppy Linux. Puppy isn't the most powerful version of Linux by a long shot, but it's great for accessing NTFS-formatted hard drives--especially if you're not comfortable with Linux's whole *mount* concept. Just open the Drives window and select a drive, and Puppy will mount it for you--in read/write mode, if possible.

If Puppy succeeds in mounting the drive with read/write permissions, you not only can copy your files elsewhere, but you can also edit them. Puppy Linux comes with AbiWord, which supports .doc files, and Gnumeric, which supports .xls. And even if it mounts read-only, you can still copy the files to an external drive, most of which are formatted in the universally accessible FAT32 file system.

But be careful how you click. Actions that take double-clicks in Windows, such as opening a file, take only one in Puppy.

Price: Free

Download Puppy Linux.

BartPE

The BartPE operating system makes a pretty good boot disc on its own, getting you into Windows and letting you access your drive. It doesn't have much in the way of repair utilities, but it has chkdsk, which should probably be the first one you try. And it can run any portable Windows utility (that that doesn't require an installation) you care to give it.

Creating a BartPE disc isn't as easy as double-clicking an .iso file. You have to download, install, and run Bart's PE Builder. To create a CD, the program needs the Windows 2000 or XP installation files. One place you're sure to find them is an actual Windows installation CD-ROM. But the recovery disc that came with your PC probably doesn't have them.

Luckily, if your PC came with XP installed (and thus, not with a true XP CD), the necessary files are probably in a folder called C:\Windows\i386. But I do mean *probably*, not definitely. However, since the PE Builder is free, you're not losing much if it can't create a disc.

Although BartPE's program selection is slim, the PE Builder lets you add other programs to the disc before you burn it.

Price: Free

Download BartPE.

Vista Recovery Disc

It looked like Microsoft was finally going to do the right thing. Beta versions of Vista SP1 came with a modern equivalent of the old Windows Boot Floppy--a Start menu option called "Create a Recovery Disc" that burned a Windows PE-based emergency CD.

Alas, Microsoft removed that feature before SP1 shipped--but not, fortunately, before NeoSmart turned the disc into an .iso file and made it available on their site.

Running on the Vista version of Windows PE, the Recovery Disc is basically a Vista installation disc minus the install files. It even has an "Install now" button that asks for a Product Key before failing. You're better off clicking the *Repair your computer* button. Among its Vista-only options are a tool for diagnosing and fixing startup problems, a version of System Restore that uses restore points on the hard drive, the restore portions of Vista's backup program, and a memory diagnostic tool.

Price: Free

Download Vista Recovery Disc.

Ultimate Boot CD for Windows

 This BartPE-based boot disc comes with a huge selection of tools to access your data and get your PC booting properly again. Some of them are even useful.

UBCD takes a long time to load and asks you some odd questions before it's finally up. But once it's there, you can edit the Windows Registry (yes, the one on the hard drive) in RegEdit, recover deleted files, and even run benchmarks. There are several malware scanners, four defraggers, and eight diagnostic programs (including HD Tune and Windows' own chkdsk).

This boot CD also includes backup utilities to help you salvage your files. There's a driver backup and a system profile backup whose Web-based documentation no longer comes up. And four separate image backup programs. One of those programs, DriveImage XML, I considered recommending in past articles but didn't because restoring from it requires a second Windows installation--something the program gets with UBCD.

The experience of setting up UBCD is identical to creating a BartPE disc--with the same possibility of failure. But when it works, you get a lot more.

Price: Free

Download Ultimate Boot CD for Windows.

Trinity Rescue Kit

This is the only Linux Live CD variant I've ever encountered that is intended specifically for rescuing Windows computers. As such, it's no surprise that it's a powerful and versatile repair environment.

But it's really not designed for Windows users. TRK's command line interface could humble anyone but the most devoted Linux geek.

If you take the time to read the 46-page documentation and learn the program, you'll be rewarded next time disaster strikes. Among the tools that will be at your disposal are a script that runs 4 different malware scanners, a tool for resetting passwords, a Registry editor, a program that clones an NTFS partition to another PC over a network, a mass undeleter that tries to recover every deleted file on the drive, several tools for recovering data off a formatted or dying disk, two tools for fixing master boot record repair programs, and hardware diagnostics.

Price: Free

Download Trinity Rescue Kit.

Active@ Boot Disk

Finally, we come to a boot disc that offers useful tools, is easy to use, and can be created from virtually any XP or Vista computer. The catch? At $80, it costs $80 more than the other five options put together.

Based on Windows PE, LSoft Technologies' Active@ Boot Disk offers a well-chosen collection of utilities, including image backup and recovery, a CD/DVD-based data backup program (Windows PE and Active@ load entirely into RAM, making the disc drive available for other uses), and a tool for recovering deleted partitions and files. You can change Windows passwords, wipe your hard drive, and choose between three partition managers. A Windows Explorer clone lets you copy files off of the hard drive.

You can even bring up Windows' Task Manager, although I'm not sure why you'd want to. And if you're feeling really geeky, there's even a HEX editor.

Price: $80 (ten-day free trial period)

Download Active@ Boot Disk.

How Best Do I Clean My Registry?

Lincoln Spector, PC World

Nov 3, 2008 10:23 am

Helen Powell wants some advice on the safest way to use a Registry cleaner.

Has a surgeon ever told you that, although they're an expert and will do the best they can, the operation still has some inherent risks? Imagine replacing the surgeon with some cheap or free software.

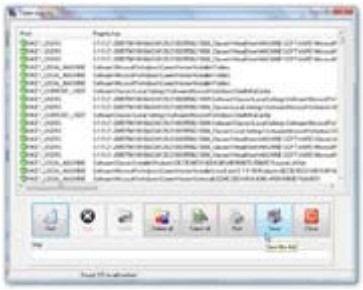
There's no truly safe way to clean your Registry, only safer ways. And since this is an inherently dangerous job, the safest option of all to not do it. I know some experts say you should clean your Registry regularly to improve performance. I disagree. Clean your Registry only if Windows has a serious problem and nothing else works.

If you must clean your Registry, back it up first. Most Registry cleaners will do this for you, but for extra protection, do it yourself, first. One way is to create a Restore Point. In XP, select *Start, All Programs, Accessories, System Tools, System Restore.* Select *Create a restore point,* click *Next* and follow the wizard. In Vista, click *Start,* type **sysdm.cpl** and press **ENTER**. Click the *System Protection* tab, then the *Create* button.

If you don't trust System Restore (and I can understand why you wouldn't), you can use the free Emergency Recovery Utility NT (ERUNT). At least you can if you're not using Vista. Although the ERUNT home page promises it works with "Windows NT/2000/2003/XP/Vista," I'm not the only person to discover that it has serious Vista issues.

And make sure you use your Registry cleaner's backup feature, as well.

Once you've backed up your Registry, open your cleaner, close all of your other programs, and start the process. After scanning your Registry, the cleaner will display a list of entries it thinks you can and should delete.

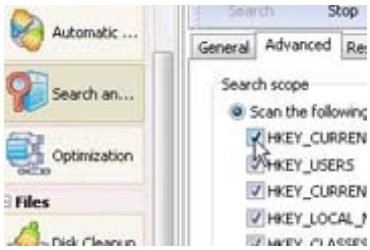


Honestly, I wish I could give you concrete, reliable advise on judging this list, but I've never actually found any myself. What do I do? I take a deep breath, cross my fingers, and "fix" every problem the cleaner finds. So far, it hasn't made anything worse. And if it does, I have backups.

Here are three Registry cleaners I recommend:

EasyCleaner: You can download ToniArts' free cleaner in installable and portable versions. The Registry cleaner (one small part of this useful tool) lacks a real backup, but it can undo your changes as well as save a list of what it's about to delete. And if it finds an invalid entry that might be dangerous to delete, it warns you with a yellow or red light icon (green, of course, means safe).

CCCleaner: Another free one that does more than just clean the Registry. More conservative than EasyCleaner, CC tends to find less and risk less, and backs up its changes into an easy-to-restore .reg file.



Reg Organizer: ChemTable's massively powerful Registry tool costs $40, but it handles the Registry like nothing else. It has automated and manual cleaners, automatic backups, a Registry editor that puts Windows' Regedit to shame, and even a Registry search tool that can help you delete or change every entry (or a selection of the entries) containing a particular word.

For more on the subject, and some opinions that contradict my own, see Steve Bass' How to Clean Your Windows Registry and Speed Up Your PC

Bart's Preinstalled Environment (BartPE) bootable live windows CD/DVD

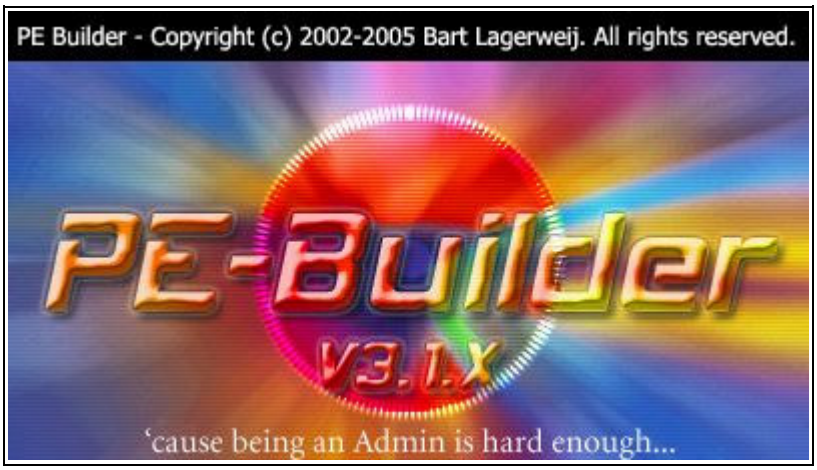
BartPE is Admin's best friend...
Version 3.1.10a (released on Feb 17, 2006)

What is BartPE and PE Builder?

Bart's PE Builder helps you build a "BartPE" (Bart Preinstalled Environment) bootable Windows CD-Rom or DVD from the original Windows XP or Windows Server 2003

installation/setup CD, very suitable for PC maintenance tasks.

It will give you a complete Win32 environment with network support, a graphical user interface (800x600) and FAT/NTFS/CDFS filesystem support. Very handy for burn-in testing systems with no OS, rescuing files to a network share, virus scan and so on. This will replace any Dos bootdisk in no time!



Introduction

PE Builder is not a Microsoft product and does not create Microsoft Windows Preinstallation Environment ("Windows PE"). Using PE Builder does not grant you a license to Microsoft Windows PE or to use the Windows XP or Server 2003 binaries in a manner other than stated in the End-User License Agreement included in your version of Microsoft Windows XP or Windows Server 2003. Microsoft has not reviewed or tested PE Builder and does not endorse its use.

Please do not contact Microsoft for support on the preinstallation environment that has been created by PE Builder!
Microsoft does not provide support for PE Builder or for the preinstallation environment created by PE Builder.

The PE Builder program (pebuilder.exe) runs on Windows 2000/XP/2003/BartPE. It does **not** run on Windows NT4/ME/9x.

To avoid any confusion, the bootable CD generated by PE Builder should be called by its nickname "BartPE"!

A word from the author

Hi, my name is Bart Lagerweij. I've been creating DOS based boot disks and bootable

CD-Roms from Dos 3.x (not sure what year) until 2002. I have created the: Corporate Modboot, Network bootdisk, CD-Rom bootdisk, a hardware independent Dos CD-Rom driver eltorito.sys and lots of other tools needed to boot a PC the way I want it to.

As you can read above I've stopped doing that in 2002. Why? I saw a Windows PE (WinPE) bootable CD-Rom (from Microsoft) in action and I got very, very curious. I knew then as I know now, that in time PE-based solutions will be every PC technicians best friend.
Goodbye to all the good and bad dos-based NTFS utilities! Now we can boot from a CD-Rom and have **full read/write access to NTFS volumes**!

Here are a few things that are possible with PE and are **not** possible with any type of dos-based boot disk, even when using network support and ntfsdos:

- Accessing very large (>2TB) NTFS volumes or accessing volumes that are not seen by the BIOS, like some fibre channel disks.
- Very reliable scanning and cleaning of viruses on NTFS volumes using a "clean boot".
- Active Directory support.
- Have remote control over other machines, using vnc or remote desktop.

While I was already thinking about what great things this could do, I noticed the end-user license agreement for Microsoft software that is included with Windows Preinstallation Environment (Windows PE) 1.2 (eula.txt). In section "1. ELIGIBILITY." it states the following:
..."You may only install and use the SOFTWARE PRODUCT if you are an active Microsoft Software Assurance Member ("SAM") for the systems product pool or servers product pool, if you currently have license coverage for Microsoft Windows operating system (OS) Upgrades via a Campus Agreement or School Agreement, or if you are a current or former participant in the Windows XP Joint Development Program, Windows XP Rapid Adoption Program, Windows .NET Server Joint Development Program, or Windows .NET Server Rapid Adoption Program. If you do not meet one or more of the requirements listed above, you may not install or use this SOFTWARE PRODUCT and you must terminate the installation of this SOFTWARE PRODUCT immediately"...

Oops, that does not include me. As a matter of fact that does not include most of us! This was very disappointing. But then I started thinking, how difficult can it be to build something similar to Windows PE from a Windows XP installation CD-Rom? A quick file compare looked like most of the needed files are on the Windows XP CD-Rom. Only because I thought building this would be easy, I started coding my own builder program. Had I known how hard it would be, I would probably never have started programming PE Builder.
This first version (v1.0.0) of PE Builder was released on April 28, 2003. Yes, version 1 was a very simple, very static, very bad and copyright violating program. And the (very friendly) people at Microsoft had every right to kick my butt. But I learned from it and in May 2003 I started on a second version. In July (three months later) v2 was ready. Version 2 did not have the problems that version 1 had. The version 2 build engine had

its own registry hive builder which was not easy to program and took about 50% of my research and coding time. It also was dynamic enough that it could build from Windows XP and Server 2003. In v2.0.1 I added a small but very powerful menu program called nu2menu, which was written by my buddy Henk de Jong. The latest 2 version (v2.0.2b) even used a new ISO filesystem called "ISO-9660:1999 (version 2)" instead of the Joliet extensions. Some non-English versions of Windows XP had filenames longer than the maximum allowed length for Joliet filenames (103 chars). I had to patch the ISO building program (mkisofs.exe) so that the Windows NT bootstrap and setup loader would boot properly. The file and directory names can now be up to 207 characters. But again this version had something bad. When comparing some INF files they looked too much like the Windows PE builder from Microsoft.

I had to change the entire INF file layout to use its own format. And on Sep 1, 2003 (almost 6 months after starting) version 3 was ready. After adding plugin support, PE Builder got very popular. People from all over the world are writing their own plugins to add the program they like and use.

BartPE vs. Windows PE?

- BartPE is not supported by Microsoft. Windows PE is an official Microsoft product.
- BartPE has a graphical user interface. Windows PE has a command line interface.
- The tools needed to make a BartPE installation are free software. Windows PE is available only to Microsoft OEM users.
- BartPE allows unlimited custom plugins. Windows PE has a limited range of plugins options.

What is the technical difference between BartPE and Windows PE?

- Target - Microsoft sees Windows PE as an installation platform. Bart sees Windows PE as the next generation rescue platform.
- Start-menu - Bart's builder gives you a simple, dynamic and powerful start-menu (Nu2Menu, see screenshots). Microsoft's builder does not give you a start-menu, it uses a command prompt.
- Build from - Bart's builder can also build from Windows XP Home Edition or from a preinstalled Windows XP version (without CD).
- Plugins - With PE Builder you can easily add applications, drivers or tools using plugins. This makes PE Builder extremely powerful. The end user can even combine plugins from different software vendors into one CD image.
- Network support - PE Builder includes its own network support tools (bartpe/penetcfg) to start TCP/IP and Microsoft Client. The TCP/IP settings like: dynamic/static ip-address, subnet-mask, default gateway, dns-servers computer-name, workgroup can be changed on-the-fly. You can create pre-defined profiles, that you can select. Microsoft Windows PE only supports DHCP or fixed settings using winbom.ini.

Also there is a plugin (NwDskPe) created by Erwin Veermans that loads the Netware Client on BartPE (IP/IPX).
- Fileshare - BartPE can start File Sharing support so you can connect to the system through a share.
- VNC - Because of the File Sharing support you can also run UltraVNC.
- Dos support - Bart's builder has a plugin called "dospe".
- License - Microsoft Windows PE is only for Enterprise/OEM customers (see previous), BartPE is for everybody!
- 64-Bit - Bart's builder does not support Windows 64-bit editions.

Requirements to build:

1. The files from your Windows Installation CD-Rom.
   Supported Windows versions are:
   - Windows XP Home Edition (must be slip streamed with Service Pack 1 or higher)
   - Windows XP Professional (must be slip streamed with Service Pack 1 or higher)
   - Windows Server 2003, Web Edition
   - Windows Server 2003, Standard Edition
   - Windows Server 2003, Enterprise Edition
2. PE Builder runs on Windows 2000/XP/2003/BartPE systems.
3. CD/DVD writer if you want to creat a bootable CD/DVD.

Why did I build PE Builder?

Microsoft only provides Windows PE to OEM and Enterprise customers. So the small companies and end users do not get Windows PE. I think this is really bad. With PE Builder they can build a Bootable XP CD-Rom (called BartPE) to use for maintaining their systems.

Licensing issues

In order to make a BartPE installation, your must have a properly licensed copy of the operating system. BartPE does not grant users who do not have a proper Windows XP/2003 license the right to use a BartPE installation.

Also, according to the Microsoft EULA for Windows XP/2003, a user may not simultaneously use more installations of these operating systems than the user has license(s) for. This also goes for BartPE. In practice this means that the user may not use, for instance, a single license installation on one computer while simultaneously using a BartPE installation (created using that license) on another computer.

More information:

- Your local Microsoft Windows end-user license agreement (`c:\WINDOWS\system32\eula.txt`)
- PE Builder license file

Getting started

This page will help you create your very first BartPE CD. It assumes that you are using Windows XP.

1. Make sure that your system has about 500MB of free disk space!

2. Download the latest PE Builder version (self-installing package) and install it.

3. Start PE Builder (pebuilder.exe). When you start PE Builder for the first time it will ask if you agree with the license agreement.

4. Now PE Builder will ask to search for windows installation files. If you don't have your windows XP setup/installation files on your system you must insert the original Microsoft Windows XP installation/setup CD at this point.
   The files you have at `c:\windows` are not installation files. They are your already installed files!
   Click "yes" to start searching. PE Builder will now search all fixed- and CD-Rom drives for Windows installation files. This will take some time. When more than one valid location is found, a dialog will appear where you can select which location you want to use.

5. At the main PE Builder dialog, select the "Burn to CD/DVD" option. When you are using an erasable medium, make sure that the "AutoErase RW" option is enabled. The "burn using" option should be set to "StarBurn". Select your CD writer device from the Device list.

6. Hit the "build" button. PE Builder will now ask you to create a `BartPE` directory, answer with "yes".

7. The license for your Microsoft Windows XP product is shown. Read it and agree to it to continue.

8. PE Builder will now start building BartPE. This will take a few minutes.
   You will see a lot of files getting copied and/or decompressed, the ISO image build and the data recorded to your CD/DVD writer.
   If the data verify was correct and there where no errors reported you can boot the CD/DVD!