

By Greg Shultz

The ability to boot Windows XP from a USB Flash Drive (UFD) offers endless possibilities. For example, you might make an easy-to-use troubleshooting tool for booting and analyzing seemingly dead PCs. Or you could transport your favorite applications back and forth from home to work without having to install them on both PCs.

However, before you can create a bootable UFD, you must clear a few hurdles. You saw that one coming didn't you?

The first hurdle is having a PC in which the BIOS will allow you to configure the USB port to act as a bootable device. The second hurdle is having a UFD that will work as a bootable device and that's large enough and fast enough to boot an operating system such as Windows XP. The third hurdle is finding a way to condense and install Windows XP on a UFD.

If you have a PC that was manufactured in the last several years, chances are that its BIOS will allow you to configure the USB port to act as a bootable device. If you have a good quality UFD that's at least 512 KB and that was manufactured in the last couple of years, you've probably cleared the second hurdle. And once you've cleared those first two hurdles, the third one is a piece of cake. All you have to do is download and run some free software to create the bootable UFD.

I'll start by showing you how to determine whether your PC's BIOS will support booting from USB and explain how to configure it to do so. Then, I'll show you how to download and use the free software to create a bootable UFD running Windows XP Professional.

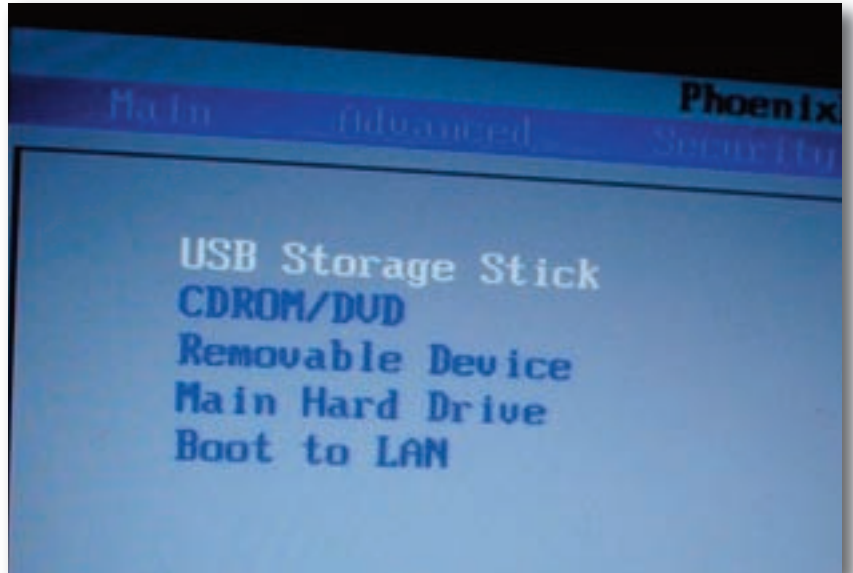


Figure A: The settings on the Boot Screen of the PhoenixBIOS made it a no-brainer to select the device.

The UFD hurdle

You probably noticed that I didn't mention how to determine if your UFD would support being configured as a bootable device, except that it must be a good quality unit of recent manufacture. Well, I've discovered that when it comes to the actual UFD, you'll just have to try it and see what happens. As long as you have a PC with a BIOS that will allow you to configure the USB port to act as a bootable device and you have configured the installation correctly, it *should* work. If it doesn't, you probably have a UFD that can't boot.

I tested three UFDs on two new computers and had mixed success. First, I attempted to use a 128 MB PNY Attache but received an error message that said "Invalid or damaged Bootable partition" on both PCs. Next, I tried a 1GB Gateway UFD and it worked on both PCs. Then, I tried a 256 MB Lexar JumpDrive Pro and it worked on only one of the

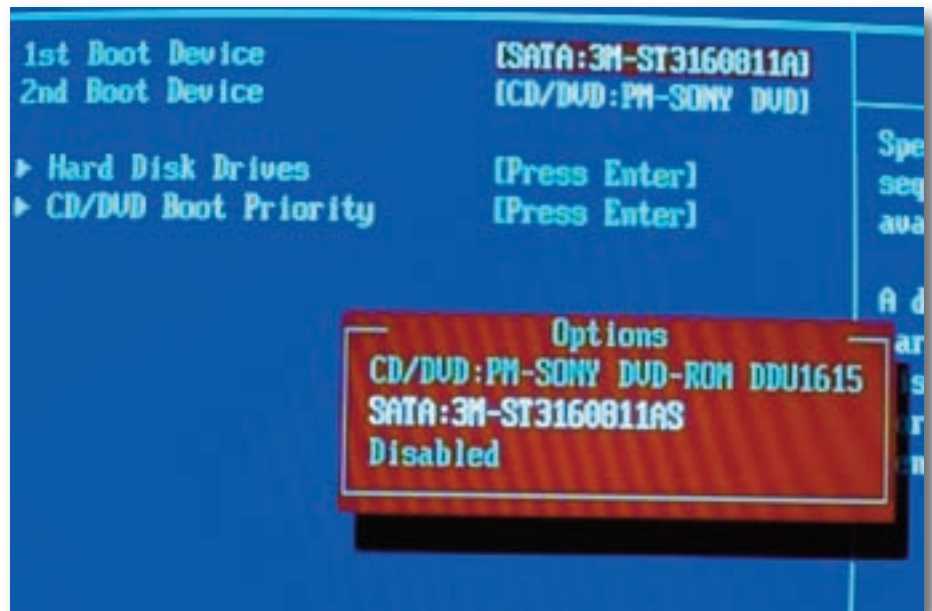


Figure B: A USB boot option didn't appear on the Boot Sequence screen.

PCs. You can find lists of UFD brands that others have had success with on the Internet.

Checking the BIOS

Not every new BIOS will allow you to configure the USB port to act as a bootable device. And some that do allow it don't make it easy. On one of my example systems, it was a no-brainer. On the other, the UFD had to be connected to the USB port before it was apparent that I could configure it as a bootable device. Let's take a closer look.

On the test system with a PhoenixBIOS version 62.04, I accessed the BIOS, went to the boot screen, and found that USB Storage Stick was one of the options. I then moved it to the top of the list, as shown in **Figure A**, thus making it the first device to check during the boot sequence. (This particular BIOS also allowed me to press the [F10] key during the boot sequence and select any one of the available bootable devices, so it really wasn't necessary to move it to the top.)

On the test system with an AMI BIOS version 2.59, I accessed the BIOS, went to the Boot Sequence screen, and didn't find a USB boot option, as shown in **Figure B**. I then went one step further and checked the Hard Disk Drives screen and still didn't find a USB boot option, as shown in **Figure C**.

I then plugged a UFD into the USB port, booted up the system, and accessed the BIOS. When I checked the Hard Disk Drives screen, the UFD appeared in the list and I could select it as the first drive (**Figure D**).

When I returned to the Boot Sequence screen, the UFD was indeed set as the first bootable device (**Figure E**).

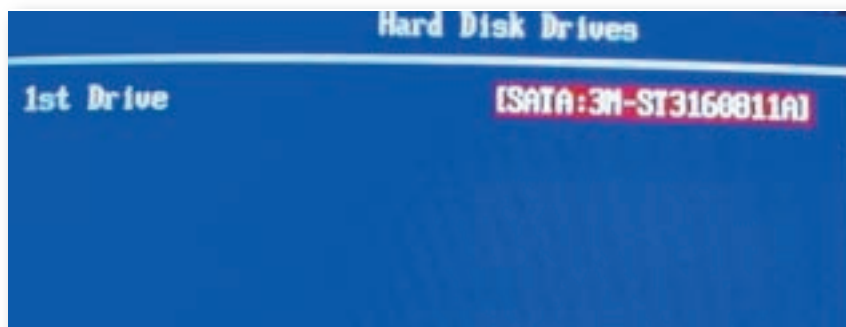


Figure C: The Hard Disk Drives screen showed only the SATA hard disk.

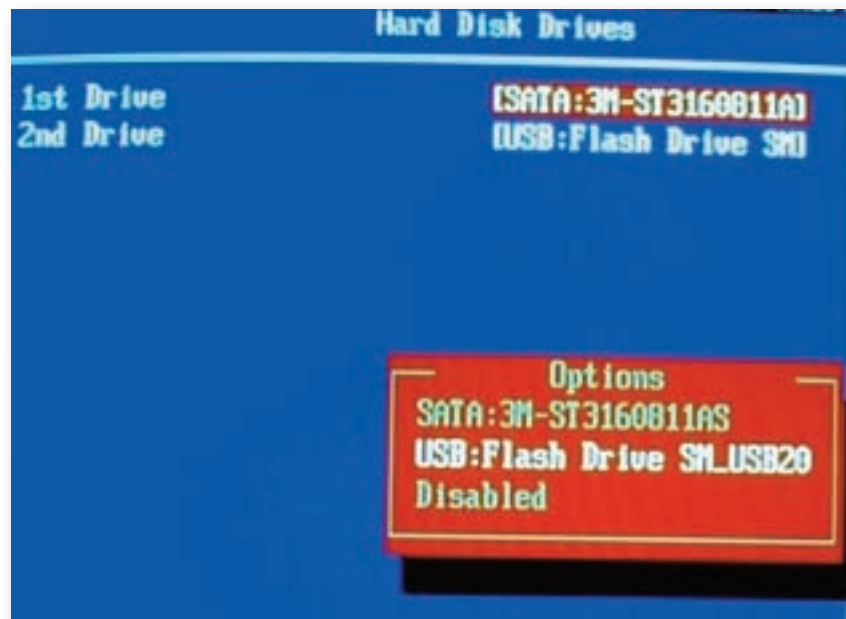


Figure D: With the UFD plugged into the USB port, I could configure the UFD as a bootable device.

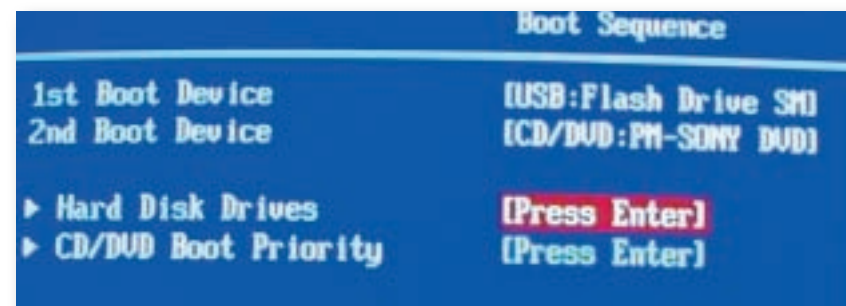


Figure E: As the Boot Sequence screen indicates, the UFD was set to be the first bootable device.

Warning

Do not run the Windows Server 2003 SP1 executable file! Doing so will completely corrupt Windows XP. We will use a set of special commands to extract the two files and then delete the rest of the package.

Rounding up the software

To condense and install Windows XP on a UFD, you'll need a program called PE Builder by Bart Lagerweij. You'll also need two files from the Windows Server 2003 Service Pack 1. And of course, you need to have a Windows XP Professional CD.

You can download PE Builder from [Bart's Web site](#). At the time of this writing, the most current version of PE Builder was 3.1.10a.

You can download Windows Server 2003 SP1 by following the link in the Knowledge Base article "[How to obtain the latest service pack for Windows Server 2003.](#)" Be sure to get the 32-bit version!

Keep in mind that at 329 MB, Windows Server 2003 SP1 will take some time to download. And although you need just two small files, the only way to get them is to download the entire package.

Preparing the software

Installing PE Builder is quick and easy. Just run the installation program and follow the onscreen instructions. To make things simpler, I installed the program in the root directory in a folder called PEBUILDER3110a.

Once PE Builder is installed, you'll need to create a folder in C:\PEBUILDER3110a called SRSP1, as shown in **Figure F**. This is the folder in which PE Builder will look for the extracted Windows Server 2003 SP1 files.

Now, you can begin extracting the two needed files from Windows Server 2003 SP1. When you download the Windows Server 2003 SP1, the executable file will have a long name: WindowsServer2003-KB889101-SP1-ENU.exe. To save on typing, you can rename the file to something shorter, such as WS-SP1.exe.

To begin, open a Command Prompt window and use the CD command to change to the folder in which you downloaded the Windows Server 2003 SP1 executable file. I downloaded the file to a folder called Downloads. Now, to extract the files contained in SP1, type the command

```
WS-SP1.exe -x
```

You'll immediately see a dialog box that prompts you to select a folder in which to extract the files and can type the name of the same folder, as shown in **Figure G**. Click OK to proceed with the extraction procedure. When the procedure is complete, just leave the Command Prompt window open.

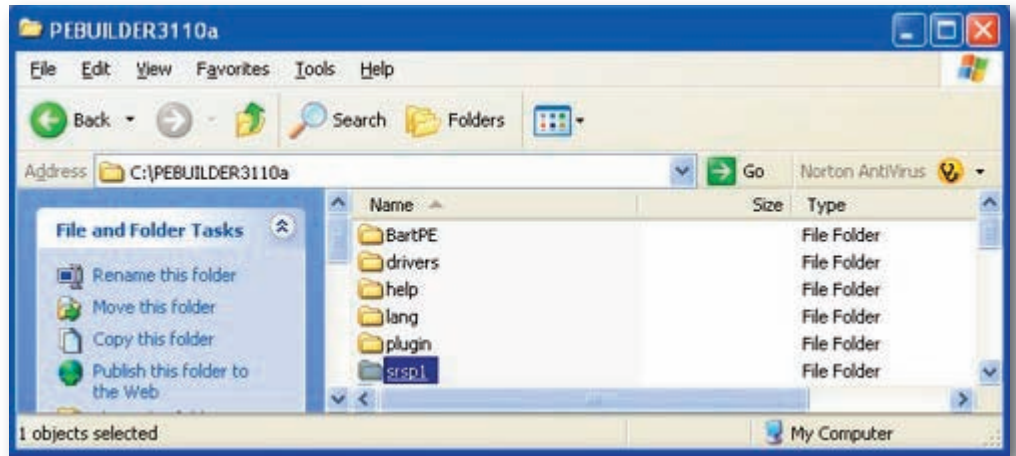


Figure F: Once PE Builder is installed, you'll need to create folder called SRSP1 in C:\PEBUILDER3110a.

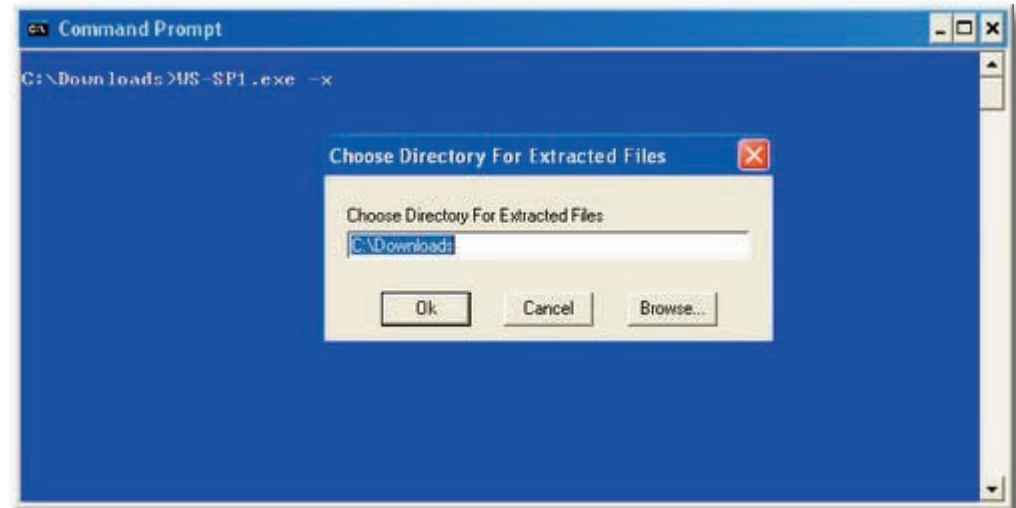


Figure G: You can extract the files into the same folder containing the Windows Server 2003 SP1 executable file.

The extraction procedure will create a subdirectory called i386 and extract all the Windows Server 2003 SP1 files there.

Use the CD command to change to the i386 folder and then copy the setupldr.bin file to the SRSP1 folder with the command:

```
copy setupldr.bin c:\pebuilder3110a\srsp1
```

Expand the ramdisk.sy_ file to the SRSP1 folder with the command:

```
expand -r ramdisk.sy_ c:\pebuilder3110a\srsp1
```

These three steps are illustrated in **Figure H**.

Now, using Windows Explorer, verify that the two necessary files are in the SRSP1 folder, as shown in **Figure I**. Once you do so, you can delete all the Windows Server 2003 SP1 files.

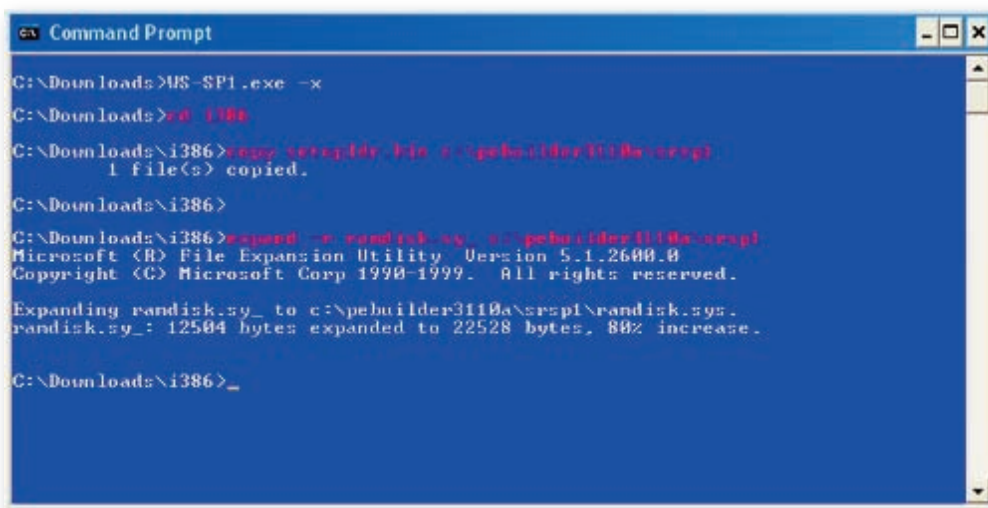


Figure H: You'll copy and expand the two necessary files to the SRSP1 folder.

Running PE Builder

Now that you've extracted the necessary files from the Windows Server 2003 SP1 package, you're ready to use PE Builder to create a compressed version of Windows XP. To begin, place your Windows XP Professional CD into the drive and hold down the [Shift] key to prevent Autostart from launching the CD. Then, launch PE Builder.

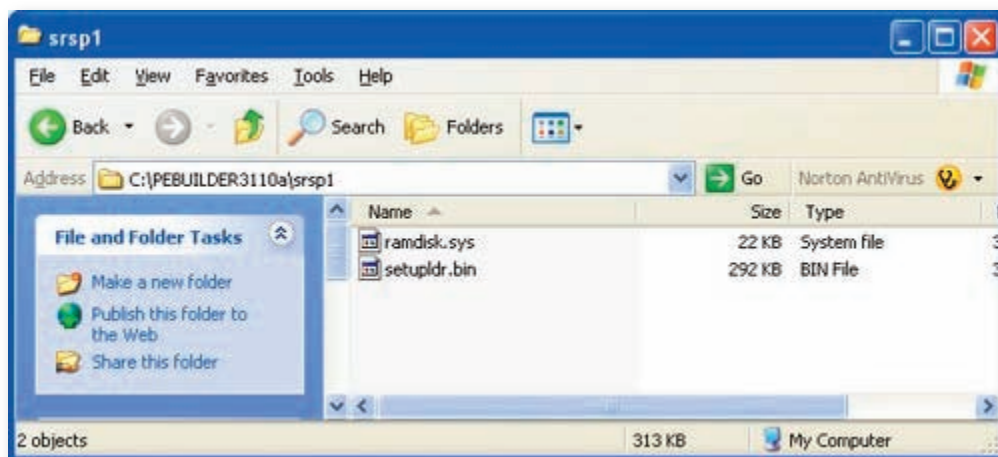


Figure I: You'll want to verify that the setupldr.bin and ramdisk.sys files are in the SRSP1 folder.

In the Source field on the main PE Builder screen, simply type the letter of drive in which you put the Windows XP Professional CD, as shown in **Figure J**. Make sure that the Output box contains BartPE and that the None option is selected in the Media Output panel. Then, click the Build button.

As PE Builder compresses Windows XP Professional into a bootable image, you'll see a detailed progress dialog box. When the operation is complete, as shown in **Figure K**, click the Close button.

Preparing the UFD to boot Windows XP

At this point, you're ready to format and copy the Windows XP Professional bootable image to the UFD with the BartPE USB Installer. To do so, open a Command Prompt window and use the CD command to change to the pe-builder3110a folder. Then, insert your UFD into a USB port and take note of the drive letter that it is assigned. On my example system, the UFD was assigned drive E.

Now, type the command:

```
pe2usb -f e:
```

You'll then be prompted to confirm this part of the operation, as shown in **Figure L**. While the operation is underway, you'll see progress indicators.

Once the BartPE USB Installer finishes its job, you'll be prompted press any key to exit the program. Now you can use your UFD to boot your computer into the BartPE interface for Windows XP, as shown in **Figure M**.

You can find a list of [specialized applications](#) on Bart's Web site, which you can install on your UFD as Plugins. For example, you can find such things as Firefox or McAfee command-line virus scanner.

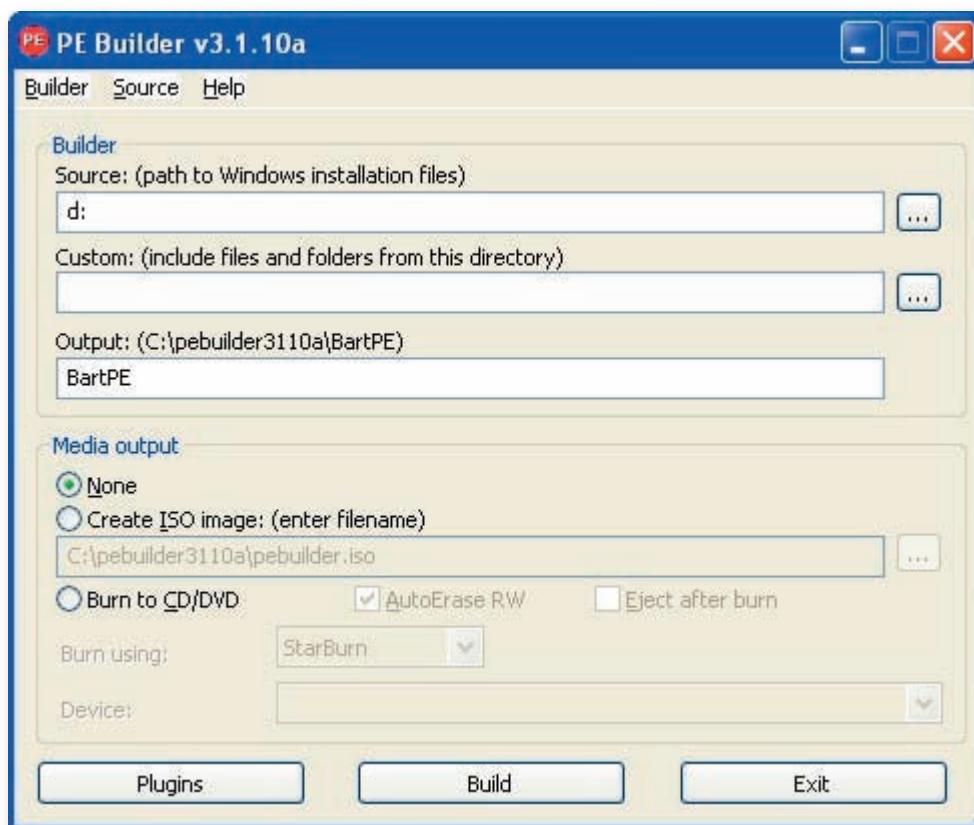


Figure J: Fill in the Source field on the main PE Builder screen.

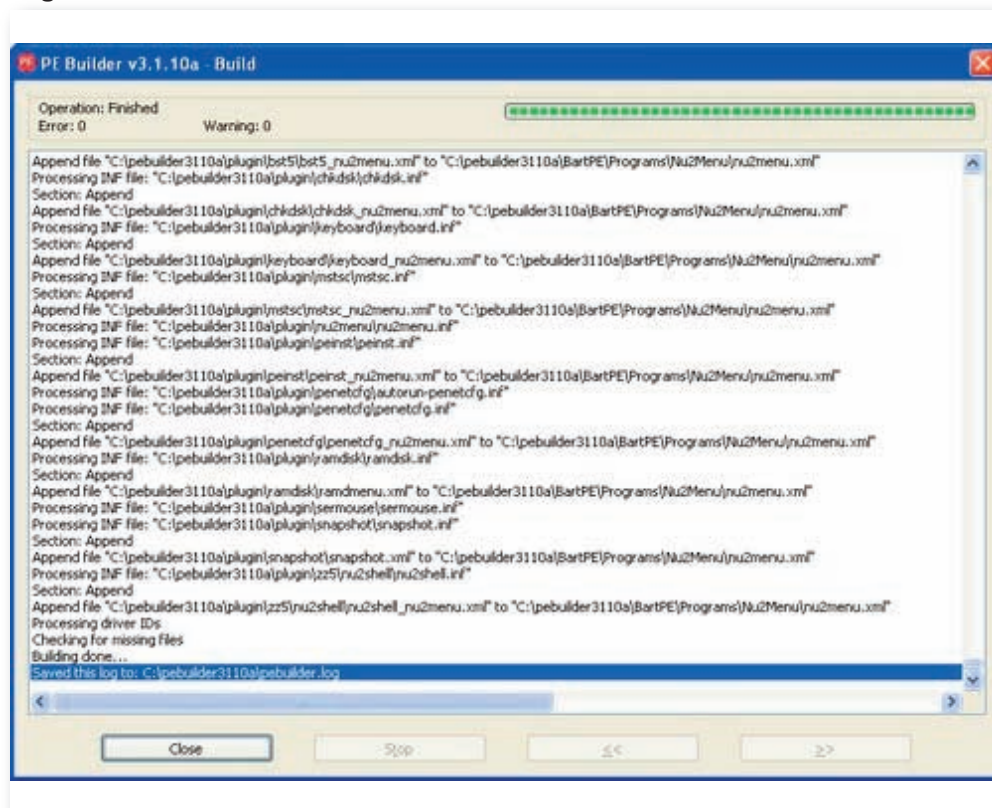


Figure K: PE Builder displays a detailed progress report.

Conclusion

Booting Windows XP from a UFD requires that your PC's BIOS support booting from USB and that you have a UFD that can be formatted as a bootable device. If you can meet these two requirements, all you need is PE Builder, a couple of files from the Windows Server 2003 Service Pack 1, and a little effort to configure a UFD to boot the BartPE interface to Windows XP.

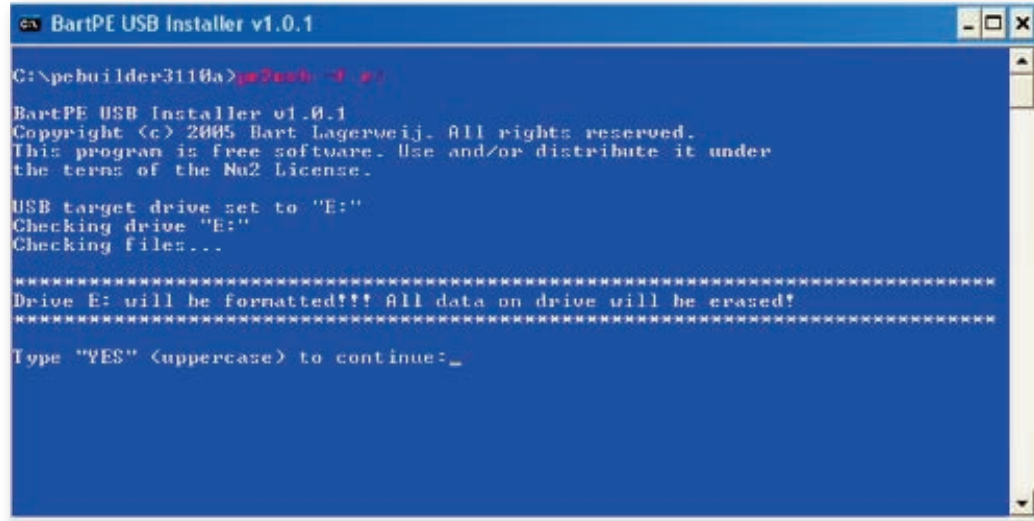



Figure L: You'll be prompted to confirm that you want to format your UFD.



Figure M: The BartPE interface provides a pared down version of Windows XP.

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- ["Build a robust Windows boot disk for free with BartPE"](#) (TechRepublic article)
- ["10 things you can do when Windows XP won't boot"](#) (TechRepublic download)
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Version history

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