

Create a bootable USB for Windows XP

A bootable USB may be useful at some point - but have you ever done such a job? The work is not simple at all, so we want to take this article to show you how: from configuring the BIOS to enable the USB port to act as a boot device. to create a boot image of Windows XP using the free PE Builder software

A *bootable* USB may be useful at some point - but have you ever done such a job? The work is not simple at all, so we want to take this article to show you how: from configuring the BIOS to enable the USB port to act as a boot device. to create a Windows XP boot *image* using the free *PE Builder* software (and a pair of Windows Server 2003 SP1 files) to format and copy the *image* to UFD (*USB Flash Drive*).

The ability to start Windows XP from a UFD can give you many useful possibilities. For example, you can create an easy-to-use troubleshooting tool for booting and analyzing almost dead computers. Or you can transfer your favorite applications back and forth from home to office without having to install them on both computers.

However, before you can create a bootable UFD, you must overcome some obstacles.

The first thing you must have is a computer with a BIOS that allows configuring the USB port to work as a boot device. The second obstacle is to have a UFD that will work as a boot device; big enough and fast enough to boot an operating system like Windows XP. The third obstacle is to find a way to install Windows XP on the UFD.

If you own a recently manufactured computer, many BIOS capabilities will allow you to configure the USB port to work as a boot device. If you have a good quality UFD, at least 512 KB and have been produced not too long ago, you will surely pass the second obstacle. And when you have overcome the first two obstacles, the third obstacle is very simple. All you need to do is download and run some free software to create a bootable UFD.

This article will begin by showing you how to determine if the BIOS on your computer supports booting from USB and explains how to configure it to do so. Here's how to download and use free software to create a bootable UFD running Windows XP Professional.

UFD obstacle

You have seen us not mentioning how to determine if your UFD is configured as a boot device. When it comes to a real UFD, you have to try it and see what happens. As long as you have a computer with BIOS that allows the USB port configuration to work as a boot device and you have configured the settings properly, then everything will work. If not, then surely your UFD cannot start.

Page 2 : Check the BIOS

Check the BIOS

Not all BIOS allows you to configure the USB port to work as a boot device. Besides some features also do not allow you to configure easily. On one of our example systems, it is a *no-brainer* . However on some other systems, the UFD must connect to the USB port before it can be configured as a boot device.

On the test system with PhoenixBIOS version 62.04, we accessed the BIOS, entered the boot screen and immediately found the **USB Storage Stick option** inside. We then moved this option to the top of the list, as shown in Figure A, so that the USB device will be the first boot device in the boot sequence. (This BIOS also allows my users to press **F10** during the boot process and select any available boot device, so it is not really necessary to move the **USB Storage Stick** item to the top as instructed.).

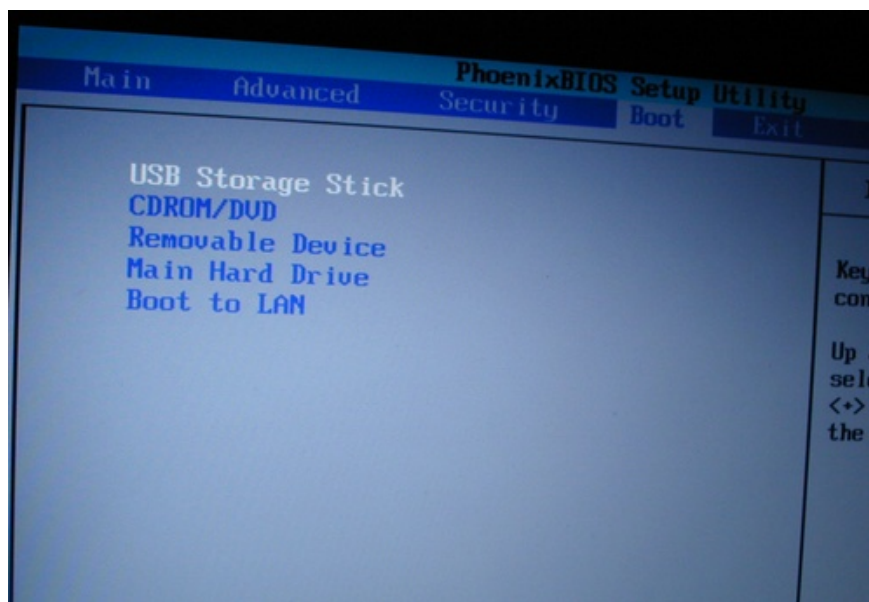


Figure A: The settings on the PhoenixBIOS boot screen allow you to select the boot device

On the test system with AMI BIOS version 2.59, we accessed the BIOS, entered the **Boot Sequence** screen, but did not see the **USB boot** option here (Figure B). We then checked both the **Hard Disk Drives** screen and still did not find the **USB boot** option, as shown in Figure C.

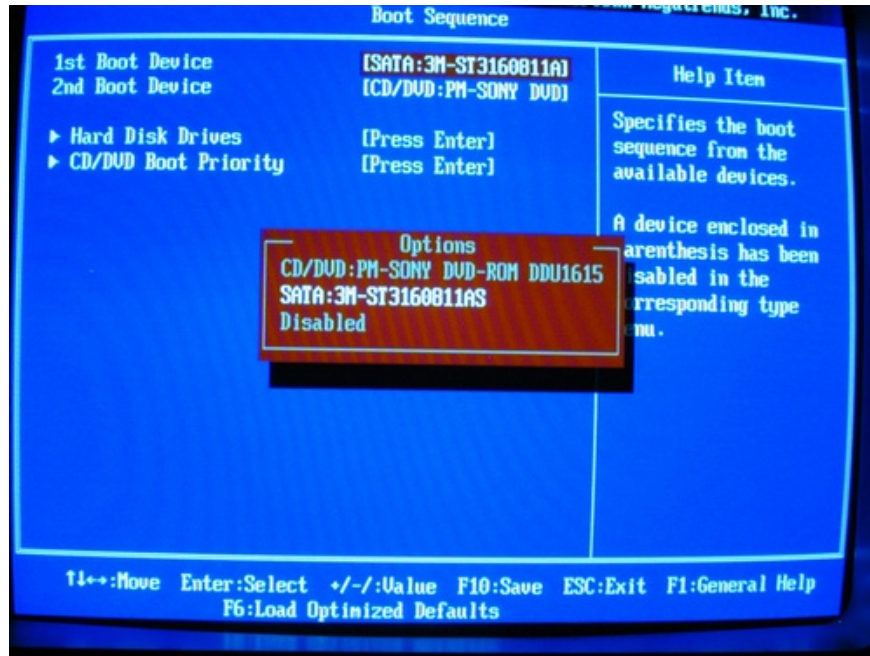


Figure B: USB boot option does not appear in the Boot Sequence screen

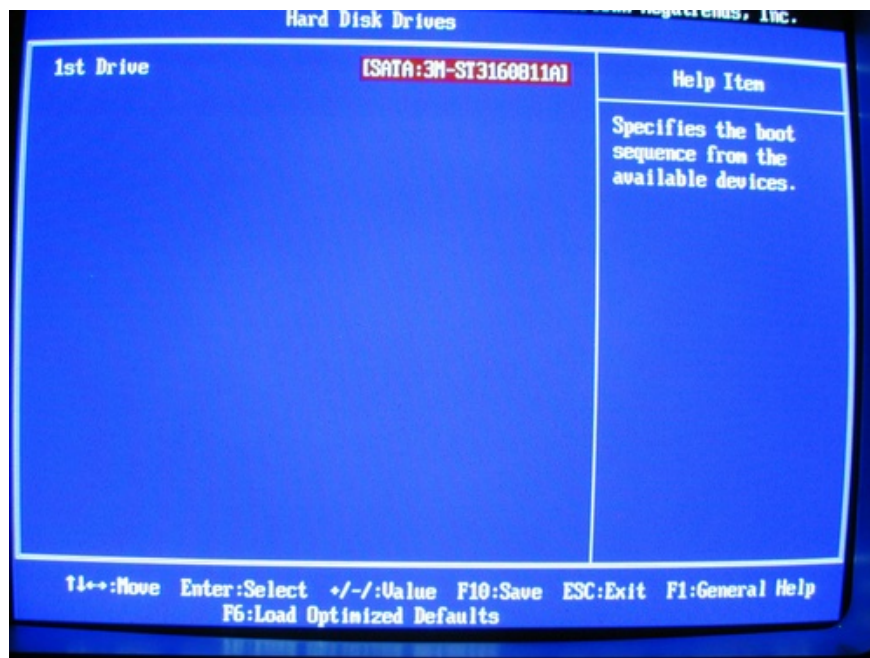


Figure C: The Hard Disk Drives screen displays only SATA hard disk.

We then plugged a UFD into the USB port, booted the system and accessed the BIOS. When checking the **Hard Disk Drives** screen, UFD appears in the list and can select it as the first boot device (Figure D).



Figure D: When UFD is plugged into a USB port, you can configure UFD as a boot device

When returning to the **Boot Sequence** screen, the UFD has been set to be the first boot device (Figure E).



Figure E: Boot Sequence screen The UFD indicator is set to be the first boot device

Obstacle about software

To install Windows XP on a UFD, you must have a program called *PE Builder* by Bart Lagerweij. You also need to have two files from Windows Server 2003 Service Pack 1. You obviously need a Windows XP Professional CD.

You can download *PE Builder* here. You can download Windows Server 2003 SP1 here, be sure to choose the right 32-bit version.

It should be noted that with 329 MB, Windows Server 2003 SP1 will take a lot of time to download. And although you only need two small files, the only way to get them is to download the entire package.

Warning

Do not run the executable file of Windows Server 2003 SP1! Because this operation will cause problems with Windows XP. We will use a special set of commands to extract these two files, then delete the rest of the package

Prepare the software

The installation of PE Builder is very simple. Just like running a regular installation program, simply follow the on-screen instructions. For simplicity, we installed the program in a folder under a folder called **PEBUILDER3110a**.

When *PE Builder* is installed, you need to create a folder in **C: PEBUILDER3110a** named **SRSP1**, as shown in Figure F. This is the folder where *PE Builder* will search for Windows Server 2003 SP1 files to be extracted.

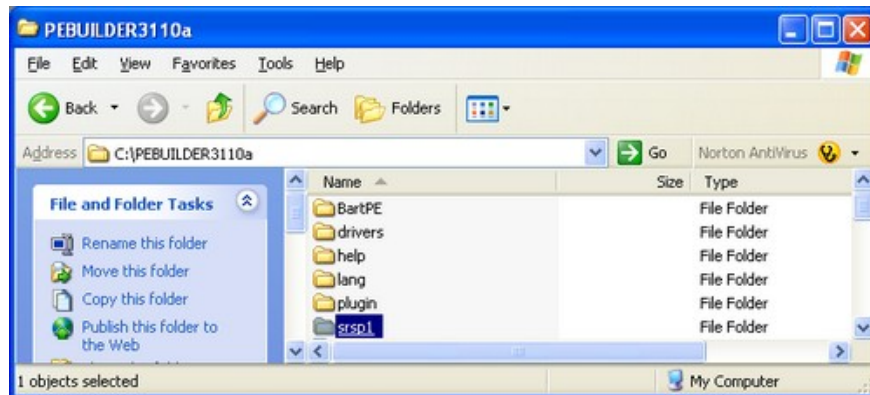


Figure F: When PE Builder is installed, you need to create a folder called SRSP1 in C: PEBUILDER3110a

Now you can start extracting the two necessary files from Windows Server 2003 SP1. When downloading Windows Server 2003 SP1, the executable file will have a fairly long name: *WindowsServer2003-KB889101-SP1-ENU.exe*. For ease of typing, you can rename the file to a shorter name, such as *WS-SP1.exe*.

To get started, open a command prompt window and use the **CD** command to change the directory in which you downloaded the executable file to Windows Server 2003 SP1. We downloaded the file to a folder called **Downloads**. And here is the time to extract the files in SP1 by typing:

WS-SP1.exe -x

You will immediately see a dialog box prompting you to select the folder to extract the files into and can type the name of the same folder, as shown in Figure G. Click **OK** to perform the file extraction process. When the procedure is complete, let the command prompt window open there.

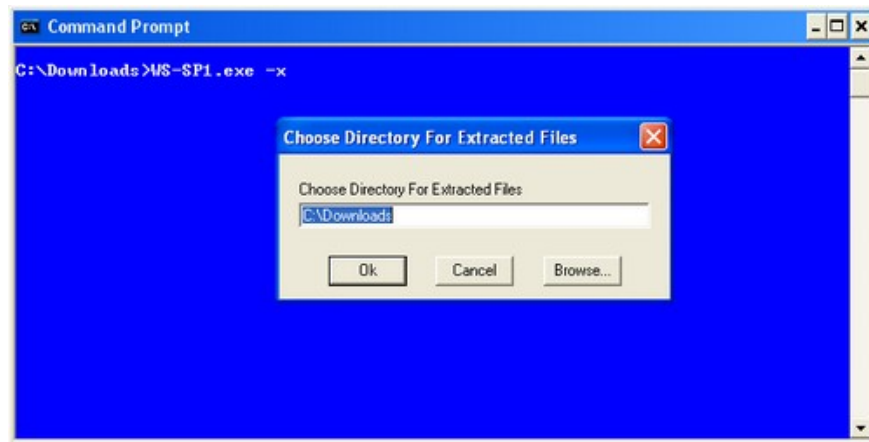


Figure G: You can extract files into the same directory that contains the executable file Windows Server 2003 SP1

The extract procedure will create a subdirectory called **i386** and extract all Windows Server 2003 SP1 files here. Use the **CD** command to switch to the **i386** folder and then copy the *setupldr.bin* file into the **SRSP1** directory using the following command:

```
copy setupldr.bin c: pebuilder3110asrsp1
```

Execute expand ramdisk.sy_ file to **SRSP1** directory with the following command:

```
expand -r ramdisk.sy_ c: pebuilder3110asrsp1
```

These three steps are illustrated in Figure H.

```
Command Prompt
C:\Downloads>WS-SP1.exe -x
C:\Downloads>cd 1386
C:\Downloads\1386>copy setupldr.bin c:\pebuilder3110a\srsp1
1 file(s) copied.
C:\Downloads\1386>
C:\Downloads\1386>expand -r ramdisk.sys c:\pebuilder3110a\srsp1
Microsoft (R) File Expansion Utility Version 5.1.2600.0
Copyright (C) Microsoft Corp 1990-1999. All rights reserved.
Expanding ramdisk.sys_ to c:\pebuilder3110a\srsp1\ramdisk.sys.
ramdisk.sys_: 12564 bytes expanded to 22528 bytes, 80% increase.
C:\Downloads\1386>_
```

Figure H: You will copy and expand the two necessary files into the SRSP1 folder

Now, using Windows Explorer, verify the necessary files in the **SRSP1** folder, as shown in Figure 1. When you are done, you can delete all Windows Server 2003 SP1 files.

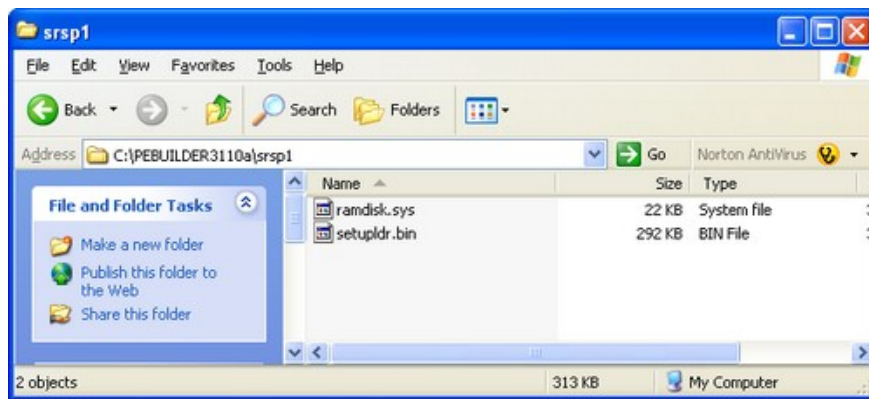


Figure I: You should verify that the setupldr.bin and ramdisk.sys files are in the SRSP1 directory

Page 4 : Running PE Builder

Run PE Builder

Until now, after extracting the required files from the Windows Server 2003 SP1 package, you are now ready to use *PE Builder* to create a compressed Windows XP version. To get started, insert the Windows XP Professional CD into the drive and hold down the **Shift** key to prevent the *Autostart* utility from starting the CD.

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

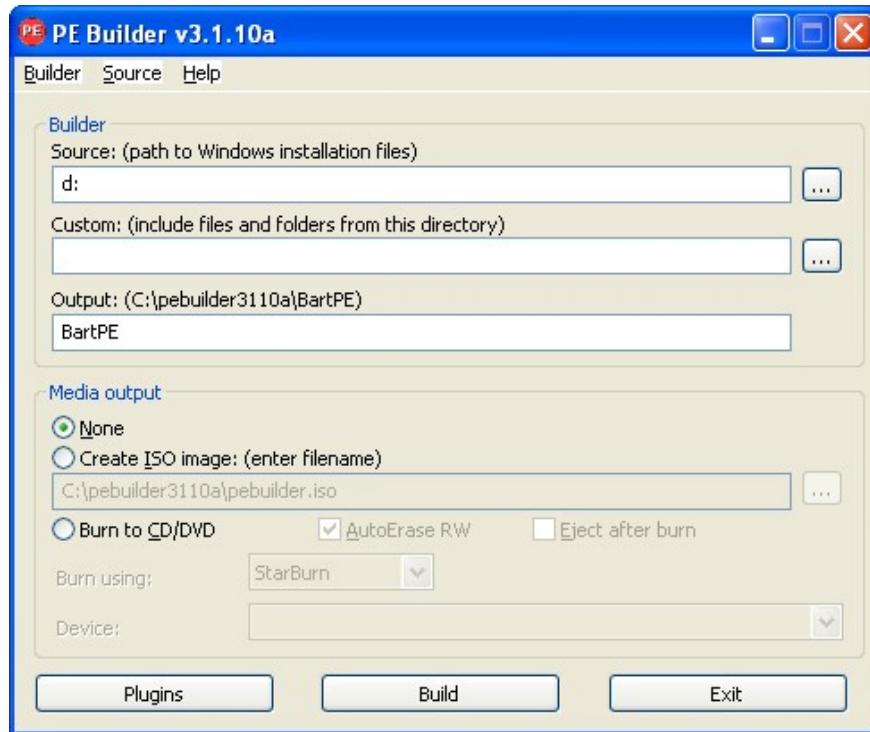


Figure J: Fill in the Source field on the main PE Builder screen

When PE Builder compresses Windows XP Professional to a boot *image* , you will see a detailed progress dialog. When the operation is complete, as shown in Figure K, click the **Close** button.

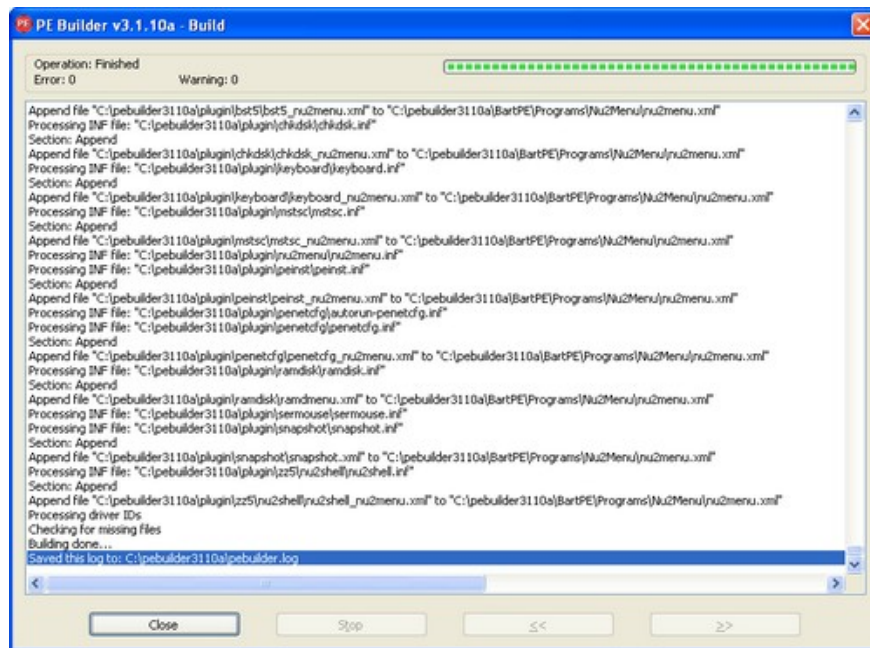


Figure K: PE Builder will display a detailed report of the process

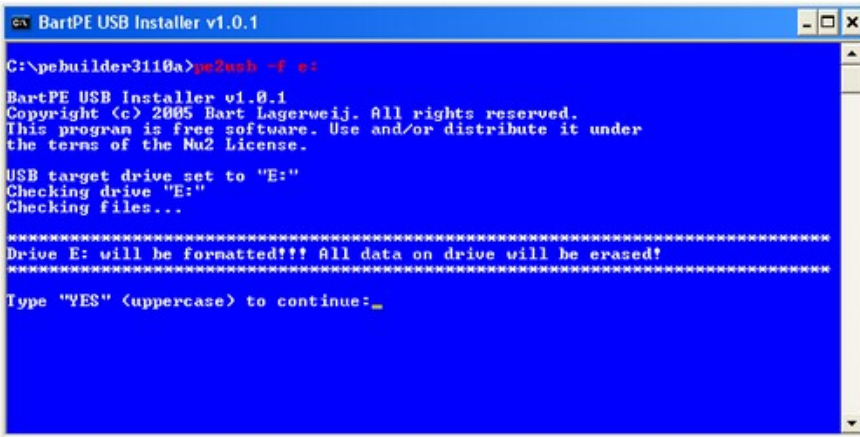
Prepare UFD to start Windows XP

Here, you are ready to format and copy the Windows XP Professional boot *image* into UFD with the *BartPE USB Installer installer*. To do so, open a command prompt window and use the **CD** command to switch to the **pebuilder3110a** folder. Then plug the UFD into a USB port and write down the character that it is assigned. On our example system, the assigned UFD is E.

Command:

```
pe2usb -fe:
```

You will then be prompted to confirm this activity, as shown in Figure L. While the operation is in progress, you will see progress indicators.



```
BartPE USB Installer v1.0.1
C:\pebuilder3110a>pe2usb -f e:
BartPE USB Installer v1.0.1
Copyright (c) 2005 Bart Lagerweij. All rights reserved.
This program is free software. Use and/or distribute it under
the terms of the Nu2 License.

USB target drive set to "E:"
Checking drive "E:"
Checking files...

=====
Drive E: will be formatted!!! All data on drive will be erased!
=====

Type "YES" <uppercase> to continue: _
```

Figure L: You will be prompted to confirm that you want to format UFD

When *BartPE USB Installer* finishes its work, you will be prompted to press any key to exit the program. You can now use UFD to boot the computer in the *BartPE* interface for Windows XP, as shown in Figure M.



Figure M: The BartPE interface provides you with a version of Windows XP

You can see a list of special applications on Bart's website, these are applications that you can install on UFD as plugins. You can find things like Firefox or McAfee's command-line virus scanner.

Conclude

Starting Windows XP from UFD first requires BIOS support for USB booting, but you also need to have a UFD that can be formatted as a boot device. If you have met both of these factors, all you need to do is download the *PE Builder* freeware program and a pair of files from Windows Server 2003 Service Pack 1, and finally try your best in configure UFD to start the BartPE interface for Windows XP.

Greg Shultz

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