bootix®

Windows PE 3.0 Boot Image Creator

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Introduction

Overview

Windows PE 3.0 Boot Image Creator is a Windows GUI program that assists in creating Windows PE 3.0 Boot Images that can be used with the bootix BootManage Administrator.

It is possible to create both 32-Bit x86 and 64-Bit amd64 Windows PE 3.0 Boot Images.

Windows PE 3.0 Boot Image Creator performs the following tasks:

- Setup a pristine Windows PE 3.0 work environment
- Integrate the bootix BMDRV device driver
- Integrate a Ramdisk that provides temporary writeable storage for WinPE 3.0
- Integrate the bootix utilities
- Integrate the BootManage Administrator scripts
- Integrate optional packages (Scripting, WMI, etc.)
- Add third-party drivers
- Adjust Windows PE 3.0 startup command file

Prerequisites

You will need a Windows machine that acts as the technician computer, i.e. the computer that is used to run the Windows PE 3.0 Boot Image Creator application.

On this machine, the Windows Automated Installation Toolkit (a.k.a. Windows AIK or WAIK) must be installed before the Windows PE 3.0 Boot Image Creator can be used.

The Windows AIK can be freely downloaded from the Microsoft web site. Please install the Windows AIK on the technician computer using default settings.

At the time of this writing, the Windows AIK is freely available in the following version that has been tested successfully with the Windows PE 3.0 Boot Image Creator:

> The Windows Automated Installation Kit (AIK) for Windows 7
> Version 1.0 / EN / 2009-06-08 / ca. 1707 MB
> Filename: *KB3AIK_EN.iso*

Installation

Windows PE 3.0 Boot Image Creator does not need to be installed. Instead, simply copy the file *pe30bic.exe* to your technician machine. When the program is executed, the following tabbed dialog appears:
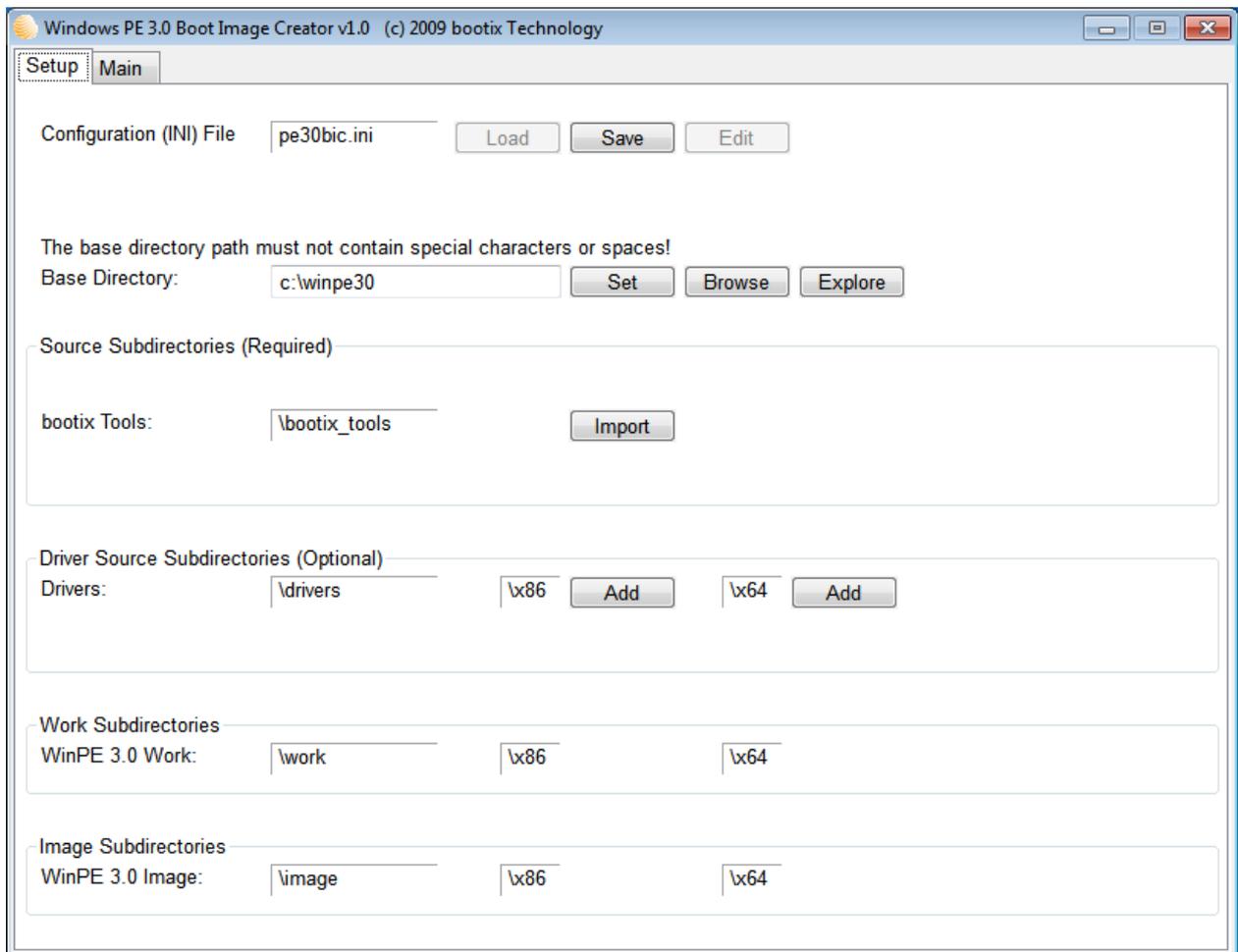

The "Setup" tab provides buttons to

- load, save, and edit the configuration file *pe30bic.ini*
- set, browse and explore the base directory
- import the mandatory source files (bootix Tools)
- add the optional driver files

Note that (with the exception of the base directory) the names of all directories cannot be changed, and are only displayed for informational purposes.

Clicking the "Main" tab displays the following dialog:
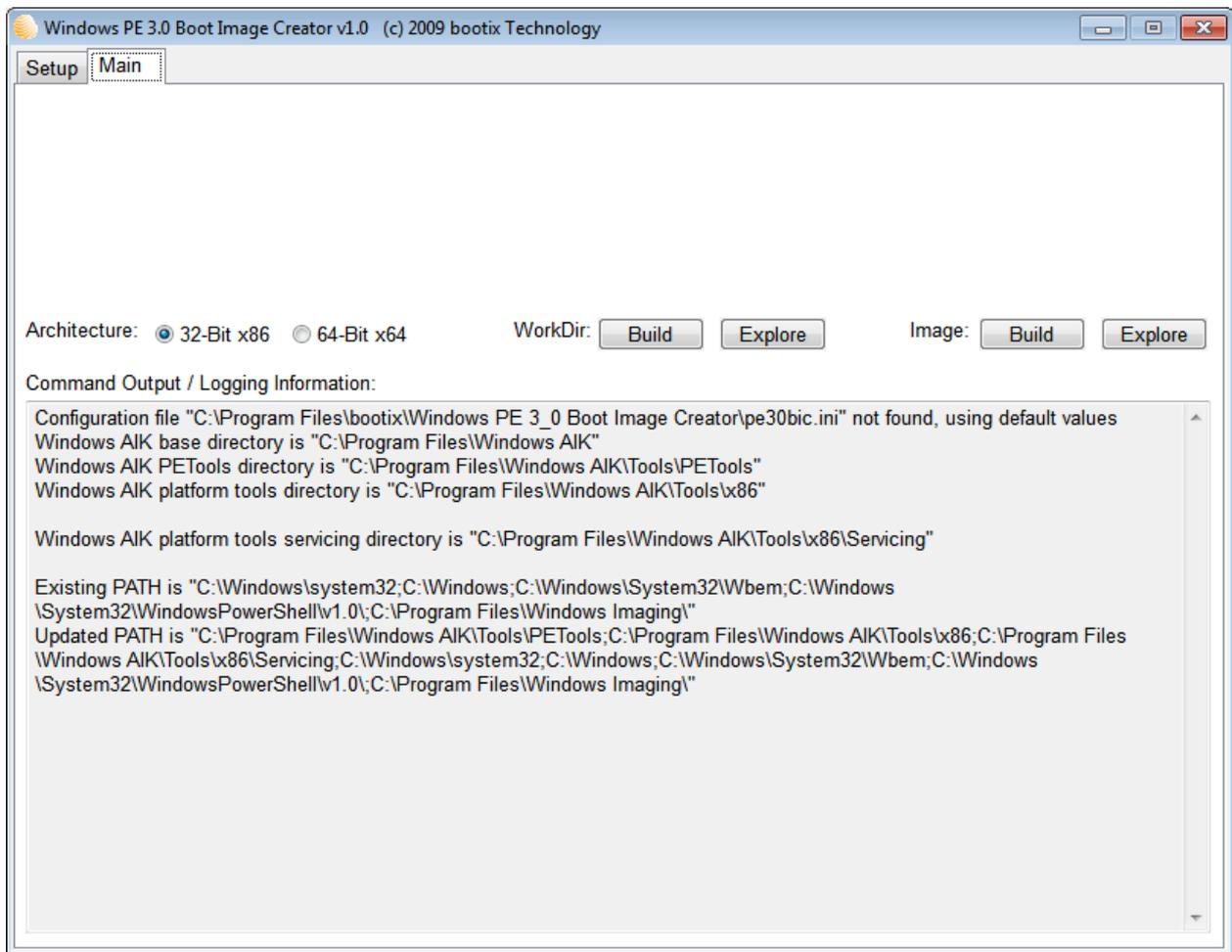
The "Main" tab provides controls to:

- specify the image architecture
- build and explore the work directory
- build and explore the image directory

The "Command Output / Logging Information" window provides detailed information about the background activities that Windows PE 3.0 Boot Image Creator performs.

While the "Setup" tab is only used to populate the build directory structure, the "Main" tab is used to actually build Windows PE 3.0 work and image directories.

The Configuration File

Windows PE 3.0 Boot Image Creator uses a configuration file to store its configuration. This file is named *pe30bic.ini* and located in the same directory as the program file.

If this configuration file is detected at program startup, the configuration information is automatically read from this file and applied to the program. Otherwise, program-internal default values are used instead.

Use the "Load" button to load the configuration setting from the file.

Use the "Save" button to save the current configuration settings to the file.

Use the "Edit" button to open the configuration file in a text editor.

The contents of a sample configuration file looks as follows:

```
[PATHS]
BASE_DIRECTORY=C:\winpe30
```

The Base Directory

Windows PE 3.0 Boot Images must be created in two steps:

First, a work directory is built from the Windows PE 3.0 sources.

Second, the actual Windows PE 3.0 WIM image is generated from the contents of the work directory.

Base Directory Structure

The base directory contains all source files that are needed to build a Windows PE 3.0 work directory and image. The structure of the base directory is as follows:

```
<base_directory>\

   bootix_tools\           (bootix drivers, utilities, and scripts)

   drivers\                (third-party drivers)

   work\                   (WinPE 3.0 work directory)
   image\                  (WinPE 3.0 image directory)
```

Most of these directories have subdirectories named x86 and x64 that hold the files for the corresponding architecture.

The first directory (bootix_tools) holds the mandatory source files that must be integrated into the Windows PE 3.0 image. So, before the first Windows PE 3.0 image can be built, this directory must first be populated. The Windows PE 3.0 Boot Image Creator assists in populating this directory.

Import bootix Tools, Utilities and Scripts

BootManage Administrator 7.4

Insert the "BootManage Administrator 7.4" CD and click the "Import" button next to "\ bootix Tools". In the folder select box that opens, navigate to the "pe20tools" folder on the "BootManage Administrator 7.4" CD.

After clicking "OK", the required bootix tools, utilities and scripts are copied from the CD to the ***bootix_tools*** subdirectory in the base directory structure.

BootManage Administrator 7.3

The "BootManage Administrator 7.3" CD does not contain a "pe20tools" folder. Instead, you will want to use the bootix tools that come with the Windows PE 3.0 Boot Image Creator distribution package.

Click the "Import" button next to "\bootix Tools". In the folder select box that opens, navigate to the folder that contains the downloaded and extracted bootix Tools files.

After clicking "OK", the required bootix tools, utilities and scripts are copied from this folder to the ***bootix_tools*** subdirectory in the base directory structure.

Add Windows PE 3.0 Drivers

Adding drivers to Windows PE 3.0 is optional and only necessary if the target hardware requires special drivers that are not included in the standard distribution. Most likely, you will want to add network and/or storage drivers.

Since drivers are architecture specific, different drivers are required for x86 and x64 architectures.

To add a driver, click the "Add" button next to "\x86" or "\x64" depending on the driver's architecture, and then navigate to directory that contains the driver's files (****.inf***, ****.sys***, ****.cat***, etc.), and click "OK"

In the text box that opens next, type a short name for the driver, using only alphanumeric characters. This will be used as the driver's subdirectory name within the base directory, i.e. the driver files will be stored in ***<base_directory>\drivers\x86\<driver_name>*** for 32-Bit x86 drivers, and ***<base_directory>\drivers\x64\<driver_name>*** for 64-Bit x64 drivers.

Building WinPE 3.0

Packages

Windows PE 3.0 Boot Image Creator automatically adds the following packages to the Windows PE 3.0 boot image:

- WinPE-Scripting-Package
- WinPE-WMI-Package

These packages are required by the BootManage Administrator environment. In this release, the addition of packages is fixed and cannot be modified.

Select Image Architecture

When building a Windows PE 3.0 work (or image) directory, the architecture needs to be specified. The following architectures are supported:

- 32-Bit x86
- 64-Bit x64

Since the architecture dependent files are kept separate in the build directory structure, one can build work and image directories for both architectures, one after the other, as follows:

Build Work Directory

Make sure that the mandatory source directory (bootix_tools) is populated, and that (if necessary) third-party drivers have been added. Check image build options and optional components, and select the desired architecture. Then, click the "Build" button next to "Workdir".

Building a Windows PE 3.0 work directory is a multiple-step process that includes:

- executing the copype.cmd command
- integrating the bootix drivers, utilities and scripts
- integrating the Scripting and WMI packages
- adding third-party drivers
- adjusting the Windows PE 3.0 startup command file

After clicking the "Build" button, several command windows appear to perform these tasks. This process is completely automated, but takes some time to complete. Logging and status information is written to the "Command output / Logging information" window.

As the result of this process, a Windows PE 3.0 work directory structure is created in *<base_directory>\work\x86* respectively *<base_directory>\work\x64*.

Customize Work Directory

The just-created work directory can be directly used to build a Windows PE 3.0 image, but it may also be further customized before the image is built from it.

Note that Windows PE 3.0 Boot Image Creator already implements some common customization tasks "under the hood". It is perfectly possible to further customize the work directory, but this is outside the control of the Windows PE 3.0 Boot Image Creator.

Also, note that Windows PE 3.0 Boot Image Creator always creates the work directory from scratch whenever the "Build" button is clicked, so all manually performed customizations of the work directory are lost.

Build Image Directory

Once a work directory was built, it can be used to create an actual Windows PE 3.0 WIM image. This is what the "Build" button next to "Image" does. Along with the bootable WIM image, some additional files are placed in the *<base_directory>\image\x86* respectively *<base_directory>\image\x64* directory. These files are required when booting the Windows PE 3.0 WIM image over the network, and they will be needed when importing the WinPE 3.0 boot image into the BootManage Administrator:

        bootmgr.exe

        Boot\
            BCD
            boot.sdi
            bootfix.bin
            etfsboot.com

        Boot\en-US\
                bootmgr.EXE.MUI

        Boot\Fonts\
                chs_boot.ttf
                cht_boot.ttf
                jpn_boot.ttf
                kor_boot.ttf
                wgl4_boot.ttf

        Sources\
            boot.wim

BMA WinPE 3.0 Image Import

Windows PE 3.0 Boot Image Creator was designed to allow easy creation of Windows PE 3.0 boot images that are suited to be used in the context of the BootManage Administrator.

Importing WinPE 3.0 Boot Images in BMA 7.4

BootManage Administrator 7.4 provides an import wizard for boot images that allows to import and manage multiple types of boot images.

Start the BootManage Administrator and select the "Boot Image Management" dialog.

There, you can define and import Windows PE 3.0 Boot Images. When the import wizard asks you to specify the actual Windows PE 3.0 boot image, select the just-created image in the *<base_directory>\image\x86* respectively *<base_directory>\image\x64* directory.

Importing WinPE 3.0 Boot Images in BMA 7.3

BootManage Administrator 7.3 does not provide an import wizard for Windows PE 3.0 boot images, so that you must copy the contents of the image directory to the TFTP server as described in the BootManage Administrator 7.3 documentation.