Print Driver Setup: 64-bit Drivers and Platforms

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Abstract

This paper provides information about how to write an INF file that correctly installs 32-bit and 64-bit printer drivers on 32-bit and 64-bit versions of the Windows® family of operating systems.

This information applies for the following operating systems:
Windows Vista®
Windows Server® 2008
Windows XP Professional x64 Edition
Windows Server 2003 Service Pack 1
Windows XP
Windows 2000

Some familiarity with INF file syntax is assumed.

References and resources discussed here are listed at the end of this paper.

The current version of this paper is maintained on the Web at:
http://www.microsoft.com/whdc/device/print/multiplatform\_INF.mspx

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# Introduction

With the release of Windows® XP Professional x64 Edition and Windows Server® 2003 x64 Service Pack (SP)1, the adoption of 64-bit computing is accelerating. Printers sold today will be used in mixed 32-bit and 64-bit environments for many years, and printer manufacturers must plan accordingly.

Printer vendors face some unique installation requirements because of the ability to share printers by using Point and Print. To support Point and Print to clients of different processor architectures, printer drivers can be loaded onto a non-native architecture platform. For example, an x64 print server might have x86 (32-bit) drivers loaded so that they can be installed on x86 clients during Point and Print.

Windows has supported 64-bit processors for some time and currently supports Itanium as well as x64. This paper focuses on x64 installation questions because these are most common, but the same approach works for installing Itanium drivers. It is described in more detail in the Windows Driver Kit (WDK).

This paper specifically examines how to write an INF file that permits the following installation options:

* An installed x86 driver on x86 versions of Windows.
* An installed x64 driver on x64 versions of Windows.
* An additional x86 driver on x64 versions of Windows.
* An additional x64 driver on x86 versions of Windows.

The difference between *installed* and *additional* printer driver is important. An installed printer driver is executed by the print spooler during the processing of a print job. This driver must have the same processor architecture as the print server.

An additional driver need not have the same processor architecture as the print server because it does not run on the print server, but is available on the server so that it can be installed on clients of the print server.

# INF File Design to Support Multi-Architecture Driver Packages

We recommend that printer drivers be installed by using INF files. The combination of the INF file, the files that make up the driver, and optionally the signature is called the *driver package*.

Writing an INF file that installs a specific printer driver on a specific version of Windows is straightforward. However, it is often useful to install different architecture versions of the same driver from a single driver package. This can be achieved by using a combination of INF file *Model* section decorations and *SourceDisksFiles* decorations.

Specifically, the INF file should follow these guidelines:

1. Provide decorated Model sections that match the architecture of the driver that is being installed.

2. Provide an undecorated Model section to support x86 driver installations and to support driver installation on earlier versions of Windows that did not support INF file Model section decorations.

3. Provide decorated SourceDisksFiles sections so that the print driver installer can locate the correct driver files on the source media.

## INF File Model Section Decorations

The following is an INF file that includes an x64 driver:

[MANUFACTURER]

%Acme Corp% = Acme, NTamd64

**[Acme.NTamd64]**

%Acme Model% = Acme100PS, <*hardware IDs*>

[Acme100PS]

CopyFiles = Driver.DLL

The Model section is decorated with *NTamd64*, which indicates that this driver is an x64 driver. On versions of Windows that require Model decorations for x64 drivers, the models in this section are available for installation or can be added as additional drivers. The versions of Windows that require Model section decorations for x64 drivers are Windows Server 2003 Service Pack 1, Windows XP Professional x64 Edition, and later versions. Windows Server 2003 SP1 and later versions require decorations on the Models section for Itanium drivers.

By convention and for backward compatibility, undecorated sections are generally assumed to be x86 drivers, as shown in the following sample:

[MANUFACTURER]

%Acme Corp% = Acme

**[Acme]**

%Acme Model% = Acme100PS, <*hardware IDs*>

[Acme100PS]

CopyFiles = Driver.DLL

Earlier versions of Windows supported 64-bit drivers such as Itanium, but the Model decorations were optional and an undecorated Model section could therefore refer to any driver architecture. Therefore, we recommend that an INF file that installs multiple architectures should contain decorated *SourceDisksFiles* sections, so that the correct files for the driver package can be located for each processor architecture.

## Example: Supporting Multiple Architectures from One INF

The following sample shows how to structure an INF file that installs the x86 and x64 version of a driver. The driver files are located in folders on the source media. In this example, the x86 files are in a folder that is named *i386* and the x64 files are in a folder that is named *amd64*. This is specified in the *SourceDisksFiles* section.

1. [MANUFACTURER]
2. %Acme Corp% = Acme, NTamd64
3. [Acme]
4. %Acme Model 1% = Acme100PS, <hardware IDs>
5. [Acme.NTamd64]
6. %Acme Model 1% = Acme100PS, <hardware IDs>
7. ;; DDInstall Section.
8. [Acme100PS]
9. CopyFiles = DriverFile.dll, ...
10. [DestinationDirs]
11. DefaultDestDir=66000
12. [SourceDisksNames.x86]
13. 1= %Location%,,,
14. [SourceDisksFiles.x86]
15. MyDriverFile.dll = 1,\i386
16. ...
17. [SourceDisksNames.amd64]
18. 1= %Location%,,,
19. [SourceDisksFiles.amd64]
20. MyDriverFile.dll = 1,\amd64
21. ...
22. [Strings]
23. Acme Corp = "Acme Corporation"
24. Acme Model 1 = "Acme Laser 100 PS"
25. Location = "Acme CD ROM"

In this example, the amd64 decorated sections are used to load an x64 driver on Windows XP x64 Edition and on Windows Server 2003 SP1 or later versions, both 32‑bit and 64-bit versions.

The undecorated Model section is used to select x86 drivers only on Windows XP x64 and Windows Server 2003 SP1 and later versions, and will also select drivers of any driver architecture on earlier 32-bit versions of Windows. In this case, when the printer driver is installed, the correct SourceDisksFiles section is used to obtain the driver files.

## Itanium

Similar logic can be used to install Itanium drivers, and to add x86 and x64 drivers as additional drivers on Itanium versions of Windows. An Itanium Model section should be decorated with NTia64, as follows:

[MANUFACTURER]

%Acme Corp% = Acme, NTia64

**[Acme.NTia64]**

%Acme Model% = Acme100PS, <*hardware IDs*>

Itanium decorations are optional in the Models section on Windows XP and Windows Server 2003. They are required in Windows Server 2003 SP1 and later versions. Therefore, driver writers should always use Model section decorations for Itanium drivers.

# Next Steps

When you create INF files that install printer drivers for more than one processor architecture, follow the guidelines in this paper. This ensures that Windows can correctly identify and locate the correct driver files in your installation package.

In summary:

* Ensure that INF file Model sections are decorated to indicate x64 or ia64 processor architectures.
* Provide an undecorated Model section for x86 drivers and to support driver installation on Windows Server 2003 SP1 and earlier, and on Windows XP x64 Edition.
* Provide decorated SourceDisksFiles sections so that Windows can locate the driver files.

# References

Windows Point and Print Technical Overview

<http://www.microsoft.com/windowsserver2003/techinfo/overview/pointandprint.mspx>

INF Requirements for 64-bit Systems

 <http://www.microsoft.com/whdc/driver/install/64INF_reqs.mspx>

How to Use Decorations in INF Files for Printer Drivers

<http://msdn.microsoft.com/en-us/library/ms802215.aspx>