Creating Custom Device Icons

December 17, 2007

Abstract

This paper summarizes the steps device vendors take to customize device icons in My Computer, Autoplay, Device Manager, and New Hardware dialogs in the Microsoft® Windows® family of operating systems.

This information applies for the following operating systems:
 Microsoft Windows Server® 2008
 Windows Vista™
 Microsoft Windows Server® 2003
 Microsoft Windows XP

See Also: “Providing Vendor Icons for the Shell and AutoPlay” in the WDK documentation at:

<http://msdn2.microsoft.com/en-us/library/ms791384.aspx>

The current version of this paper is maintained on the Web at:
 <http://www.microsoft.com/whdc/driver/install/customicon.mspx>

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

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#### Revision History

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| --- | --- |
| **Date** | **Change** |
| 12/17/2007 | Update WDK documentation references |
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# Introduction

Windows Vista improves the user experience by allowing device vendors to customize the way their devices appear in Windows. Manufacturers can provide icons that suggest the physical appearance of their devices, thus making it easy for users to identify those devices in Windows.

Windows XP, Windows XP Embedded, and Windows 2003 provided a method for manufacturers to change the appearance of storage devices in My Computer and Autoplay dialogs. In Windows Vista, manufacturers can also customize the icons of other device classes, and those icons can appear in the Device Manager, the Safe Hardware Removal tool, the Found New Hardware Wizard, and new hardware bubble notifications.

This whitepaper summarizes steps necessary to add custom icons to driver packages for all of these operating systems.

# Icon Design Guidelines

The Microsoft publication *Creating Windows XP Icons*, listed at the end of this whitepaper, provides step-by-step guidelines for creating icons that have the "look and feel" of Windows graphical elements.

The key elements for custom icon design for Windows include:

* An icon design that incorporates Windows style characteristics as defined in the Icon Style Overview section of *Creating Windows XP Icons*.
* At least these three pixel resolutions for each icon: 48 x 48, 32 x 32, and 16 x 16 pixels.
* Each icon contains at least these color depths to support different display settings:

24-bit with 8-bit alpha (32-bit)

8-bit (256 colors) with 1-bit transparency

4-bit (16 colors) with 1-bit transparency

# Adding the Icon to a Driver Package

To add the icon to the driver package, follow these steps:

1. Save the icons as resources in a DLL included in the driver package. If the driver does not have a DLL, create a DLL specifically to store the icons. For information on adding icons as resources to DLLs, see the Platform SDK.

2. If the device INF does not already copy the DLL, update the CopyFiles sections of the INF to copy the DLL. Be sure to include the DLL in the [SourceDiskFiles] and [DestinationDir] sections of the INF.

3. Use the AddProperty INF directive in the DDInstall section of the device of interest to register the icon. AddProperty is a new INF directive in Windows Vista that adds several types of properties. For detailed information on the AddProperty directive, see the Device Property Reference listed in the Resources section at the end of this whitepaper). For adding device icons, AddProperty takes the following form.

[*DDInstall*]

AddProperty=*SectionName*

…

[*SectionName*]

DeviceIcon,,,,”*resource\_dll*,*resource\_id*”

Syntax notes:

*DDInstall* and *SectionName* are arbitrary names that developers can customize as appropriate.

*resource\_dll* lists the path and name of the DLL that contains the device icon.

*resource\_id* lists the absolute resource ID, in decimal, of the device’s icon in the DLL’s resource list. Note that this number must always be negative.

The following INF excerpt registers the icon stored with a resource ID of 2 in resource.dll.

[MyDevice.NT]

AddProperty=IconProperties

…

[IconProperties]

DeviceIcon,,,,”%SystemRoot%\system32\resource.dll,-2”

Note that the AddProperty directive is new in Windows Vista. Previous versions of Windows simply ignore this directive, and only show custom icons in My Computer and the Autoplay dialog. Manufacturers can therefore use one INF for versions of Windows from Windows XP through Windows Vista.

4. For Volume class devices, use an AddReg section in the DDInstall section of the device of interest to add the Icons and NoMediaIcons registry keys. The Icons key specifies the full path to the icon to be displayed when media is present in the device. The NoMediaIcons key specifies the full path to the icon that should appear when no media is present in this. Both keys are stored as REG\_MULTI\_SZ. The syntax is the same as Step 3, above.

 The following INF excerpt registers icons in resource.dll (IDs 11, 12) as the icons for this device. Note that in this case the DLL is stored in the system32 folder. The paths in these keys must reflect folder that the DLL was copied to in step 2, above.

[MyDevice.NT]

AddReg = *IconInformation*

[*IconInformation*]

HKR,,Icons,0x10000,"%SystemRoot%\system32\resource.dll,-11"

HKR,,NoMediaIcons,0x10000,"%SystemRoot%\system32\resource.dll,-12"

 Note that earlier documentation described the use of icon files (.ico) instead of DLLs with icon resources. Although Windows does allow the use of icon files for My Computer and Autorun (described here in Step 4), it does not support icon files in AddProperties (Step 3). For simplicity, use a DLL with resources for both.

Note that drivers and other code should never access or modify this registry key directly. Instead, use one of the following APIs:

* From user-mode, use **SetupDiCreateDevRegKey** and **SetupDiOpenDevRegKey**.
* From kernel-mode, use **IoOpenDeviceRegistryKey**.

For information about the INF entries cited here, see the Device Installation Reference in the Windows Driver Kit.

# Example INF

The following example INF installs a driver for a hypothetical device called “Gadget 3000”. An earlier version of the INF file has been updated to include device icons as described in the previous section, and those updates appear in boldface.

[Version]

Signature="$WINDOWS NT$"

Class=TOASTER

ClassGuid={B85B7C50-6A01-11d2-B841-00C04FAD5171}

Provider=%Mfg%

DriverVer=4/17/2006,2.0.1403.0

CatalogFile=gadget.cat

[Manufacturer]

%Mfg%=Models

[Models]

; DisplayName Section DeviceId

; ----------- ------- --------

%GadgetDevice.DeviceDesc%=Gadget\_Device, PCI\VEN\_1234&DEV\_1234

[Gadget\_Device.NT]

CopyFiles=Gadget\_Device.NT.Copy,**Gadget\_Icon\_Copy**

**AddProperty=Gadget\_Icons**

**AddReg=Gadget\_Explorer\_Icons**

[Gadget\_Device.NT.Copy]

Gadget.sys

**[Gadget\_Icon\_Copy]**

**; This DLL contains all the icons; copy it to the system32**

**; directory (step 2)**

**gadgeticons.dll**

**[Gadget\_Icons]**

**; Register icons for use in Device Manager, etc. (step 3)**

**DeviceIcon,,,,”%winddir%\system32\gadgeticons.dll,-1”**

**[Gadget\_Explorer\_Icons]**

**; Register icons for use in My Computer (step 4)**

**HKR,,Icons,0x10000,"%windir%\system32\gadgeticons.dll,-11"**

**HKR,,NoMediaIcons,0x10000,"%windir%\system32\gadgeticons.dll,-12"**

;-------------- Service installation

[Gadget\_Device.NT.Services]

AddService = Gadget, %SPSVCINST\_ASSOCSERVICE%, Gadget\_Service\_Inst

[Gadget\_Service\_Inst]

DisplayName = %Gadget.SVCDESC%

ServiceType = 1 ; SERVICE\_KERNEL\_DRIVER

StartType = 3 ; SERVICE\_DEMAND\_START

ErrorControl = 1 ; SERVICE\_ERROR\_NORMAL

ServiceBinary = %12%\Gadget.sys

LoadOrderGroup = Extended Base

[DestinationDirs]

DefaultDestDir = 12

**Gadget\_Icon\_Copy = 11**

[SourceDisksNames]

1 = %DiskId1%,,,""

[SourceDisksFiles]

Gadget.sys = 1,,

**gadgeticons.dll = 1,,**

[Strings]

SPSVCINST\_ASSOCSERVICE= 0x00000002

Mfg=”Gadget Devices, Inc.”

GadgetDevice.DeviceDesc=”Gadget 3000”

Gadget.SVCDESC=”Gadget 3000 service”

DiskId1=”Installation CD”

# Resources

Device Property Reference in the Windows Driver Kit

<http://msdn.microsoft.com/library/default.asp?url=/library/en-us/Intro_g/hh/Intro_g/ddksplash_d0c992d8-3d64-44cc-ab2c-13bcfa0faffb.xml.asp?frame=true>

Platform SDK

<http://msdn.microsoft.com/library/default.asp?url=/library/en-us/sdkintro/sdkintro/devdoc_platform_software_development_kit_start_page.asp?frame=true>

Creating Windows XP Icons

<http://msdn.microsoft.com/library/default.asp?url=/library/en-us/dnwxp/html/winxpicons.asp>

Preparing Hardware and Software for Use with AutoPlay

<http://msdn.microsoft.com/library/default.asp?url=/library/en-us/shellcc/platform/Shell/programmersguide/shell_basics/shell_basics_extending/autoplay/autoplay2k_cookbook.asp>