

## Chapter 8

# Microsoft® DirectX™ 3 Software Development Kit

AutoPlay

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## Overview

### About AutoPlay

Microsoft® AutoPlay is a feature of the Microsoft Windows® operating system. AutoPlay automates the procedures for installing and configuring products designed for Windows-based platforms that are distributed on compact discs. When you insert a disc containing AutoPlay into a CD-ROM drive on a computer running Windows, AutoPlay automatically starts an application on the disc that installs, configures, and runs the selected product.

You can use AutoPlay to install and run CD-ROM applications that run in Windows, whether the application is based on the MS-DOS® operating system, Windows 3.0, Windows 3.1, Windows 95, or Windows NT®. If you want your CD-ROM product to display the Microsoft Windows 95 logo, it must be enabled for AutoPlay.

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MS-DOS, Windows versions prior to Windows 95, and Windows NT versions 3.51 and earlier do not support AutoPlay. Adding AutoPlay to a compact disc, however, does not hinder or alter user interaction on computers running one of these operating systems.

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### How AutoPlay Works

The implementation of AutoPlay relies on the following three items:

- A set of 32-bit CD-ROM device drivers for Windows 95 and Windows NT. These device drivers detect when a user inserts a compact disc into a CD-ROM drive; device drivers for MS-DOS or previous versions of Windows do not.
- An Autorun.inf file on the compact disc. When you insert a disc into a CD-ROM drive on a computer running Windows 95 or Windows NT, the system immediately checks whether the disc has a personal computer file system. If it does, the system checks for a file named Autorun.inf. This file specifies the application that AutoPlay runs, and it can contain other information as well. For more information about this file, see *The Autorun.inf File*.
- A startup application on the compact disc. Although you can start any application on the disc by specifying it in the Autorun.inf file, typically the application performs a startup or installation function. By including your own startup application, you can control the install, uninstall, and run processes for your product.

## The Autorun.inf File

The Autorun.inf file is a text file located in the root directory of the compact disc. This file contains the name of the startup application on the disc (the application that runs automatically when the disc is inserted in the CD-ROM drive), and the icon that you want to represent the AutoPlay-enabled compact disc in the Windows user interface. The Autorun.inf file also can contain optional menu commands that you want added to the shortcut menu, which is displayed when the user right-clicks the CD-ROM icon.

At a minimum, an Autorun.inf file contains three lines of text and identifies the startup application and the icon, as shown in the following example:

```
[autorun]
open=filename.exe
icon=filename.ico
```

The **[autorun]** section identifies the lines that follow it as AutoPlay commands. An **[autorun]** section is required in every Autorun.inf file. The **open** command specifies the path and file name of the startup application, and the **icon** command specifies the file that contains the icon information.

The Autorun.inf file also can contain architecture-specific sections for Windows NT 4.0 running on RISC processors. For each type of processor architecture, add a section to the Autorun.inf file that contains the file name of the startup application you want to run for that architecture. For x86 architectures, use the standard **[autorun]** line. Use **[autorun.mips]** to run an application on MIPS architecture, **[autorun.alpha]** for applications on the Alpha architecture, and **[autorun.ppc]** for the PowerPC architecture. The following example shows how to create an Autorun.inf file that runs different startup applications depending on the computer architecture:

```
[autorun]
open=filename.exe
icon=filename.ico

[autorun.mips]
open=filenam2.exe
icon=filename.ico

[autorun.alpha]
open=filenam3.exe
icon=filename.ico

[autorun.ppc]
open=filenam4.exe
icon=filename.ico
```

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The shell checks for an architecture-specific section first. If it does not find one, it uses the information in the **[autorun]** section. After the shell finds a section, it ignores all the other sections, so make sure each section contains all the information for that architecture.

## Tips for Writing AutoPlay Applications

This section discusses the following tips for writing AutoPlay applications:

- *Opening a Startup Application*
- *Loading in the Background*
- *Conserving Hard Disk Space*
- *Using the Registry*
- *Setting the NoDriveTypeAutoRun Value*

### Opening a Startup Application

Users should receive feedback soon after they insert an AutoPlay compact disc in the drive. You can accomplish this by specifying in the **open** command of the Autorun.inf file a small startup application that loads very quickly. The application also should clearly identify the title it plays and provide an easy way to cancel the operation.

### Loading in the Background

Typically, users click OK when the startup application displays a dialog box asking them if they would like to proceed. Take advantage of this time by starting another thread that begins loading the setup application in the background before the user clicks OK. This significantly reduces the time users perceive it takes to load your application.

### Conserving Hard Disk Space

Hard disk space is a limited resource. Here are a few tips that conserve hard disk usage:

- Run your application from the compact disc directly, without running any installation application.
- If your application needs to use the hard disk drive, install only the functional components necessary to run the application. In addition, provide a way to uninstall these components from the hard disk. For more information about uninstalling an application, see the documentation included with the Microsoft Win32 Software Development Kit (SDK).
- If your application needs to use the drive as a data cache, provide the user with options in the startup application that will discard the cached data when the user quits the title or game.

## Using the Registry

The registry is a feature of Windows that supersedes the initialization (.ini) and application configuration files. For information about application programming interfaces that manipulate the registry, see the documentation included with the Win32 SDK.

If your product records and uses initialization information, you can use the registry to store and retrieve this information. Your startup application can use the information in the registry to determine whether the product needs to be installed. If there are no registry entries for your product—which means your product is being used for the first time—you could display a dialog box that lists the setup options. If your product is listed in the registry—which means it has already been installed—you could skip the setup options.

By changing the system registry, you can enable a computer to read the Autorun.inf file from a floppy disk. This feature of implementing AutoPlay on a floppy disk is provided only to help you debug your Autorun.inf files before you burn the compact disc. AutoPlay is intended for public distribution on compact disc only. To implement AutoPlay on a floppy disk, carry out the following procedure:

- 1 In Registry Editor (Regedit.exe), click Edit, and then click Find.
- 2 In the Find What box, type the following, and then click Find Next:  
**NoDriveTypeAutoRun**
- 3 Click Edit, and then click Modify.
- 4 Change the data of the NoDriveTypeAutoRun value from 0000 95 00 00 00 to 0000 91 00 00 00, and then click OK.

This enables AutoPlay on any drive. You must, however, start AutoPlay manually when it is installed on a floppy disk. To do this, double-click the floppy disk icon, or right-click the floppy disk icon, and then click AutoPlay.

- 5 After you complete your tests of Autorun.inf, reset the value of NoDriveTypeAutoRun to 0000 95 00 00 00.

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Because implementing AutoPlay on a floppy disk provides an easy way to spread computer viruses, it is appropriate to suspect that any publicly distributed floppy disk that contains Autorun.inf files is contaminated.

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For more information about the NoDriveTypeAutoRun value, see *Setting the NoDriveTypeAutoRun Value*.

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## Setting the NoDriveTypeAutoRun Value

The NoDriveTypeAutoRun value in the registry is a 4-byte binary data value of the type **REG\_BINARY**. The first byte of this value represents different kinds of drives that can be excluded from working with AutoPlay. The initial setting for this byte is 0x95, which excludes the unrecognized type drive, DRIVE\_UNKNOWN, DRIVE\_REMOVABLE, and DRIVE\_FIXED media types from being used with AutoPlay. You can enable a floppy disk drive for AutoPlay by resetting bit 2 to zero, or by specifying the value 0x91 to maintain the rest of the initial settings. For information about how to change the registry values, see *Using the Registry*. A table identifying the bits, bitmask constants, and a brief description of the drives follows:

Bit number	Bitmask constant	Description
0 (low-order bit)	DRIVE_UNKNOWN	Drive type not identified.
1	DRIVE_NO_ROOT_DIR	Root directory does not exist.
2	DRIVE_REMOVABLE	Disk can be removed from drive (a floppy disk).
3	DRIVE_FIXED	Disk cannot be removed from drive (a hard disk).
4	DRIVE_REMOTE	Network drive.
5	DRIVE_CDROM	CD-ROM drive.
6	DRIVE_RAMDISK	RAM disk.
7 (high-order bit)		Reserved for future use.

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For Windows NT, you must restart Windows Explorer before any changes take effect.

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## Suppressing AutoPlay

You can manually prevent the Autorun.inf file on a compact disc from being parsed and carried out by holding down the SHIFT key when you insert the disc. For users of Windows NT version 4.0 and Windows 95 with Internet Explorer version 4.0, however, you can suppress AutoPlay automatically. You might want to do this if your application has a setup application that requires the user to insert a disc that contains an Autorun.inf file. In this case, you do not want the AutoPlay feature to begin running an application while your setup application is running. To suppress AutoPlay if your setup application is in the foreground window, add the following code to your setup initialization code:

```
uMessage - RegisterWindowMessage(TEXT("QueryCancelAutoPlay"));
```

Then, add the following code to your setup window procedure:



```
if(msg == uMessage)
{
    // return 1 to cancel AutoPlay
    // return 0 to allow AutoPlay
    return 1L;
}
```

## AutoPlay for MS-DOS-Based Applications

You also can use AutoPlay to install, configure, and run MS-DOS-based applications in a Windows MS-DOS session. You can configure each MS-DOS-based application with its own unique icon, Config.sys file, and Autoexec.bat file.

Windows creates correct configuration files for an MS-DOS-based application. The startup application then can start the MS-DOS-based application in a window. It can even instruct Windows to restart the application if necessary, or it can immediately return to Windows when the application closes.

## Reference

### Commands

#### defaulticon

```
defaulticon=path\iconname.ico
```

Specifies an absolute path on the compact disc to the file that contains the information for the icon. The icon represents the AutoPlay-enabled compact disc in the Windows user interface.

*path\iconname.ico*

Absolute path and file name of the file containing the icon information. You also can specify a .bmp, .exe, or .dll file. If a file contains more than one icon, specify the resource number (index) of the icon in the file to use.

If both the **icon** and **defaulticon** commands are present in an Autorun.inf file, AutoPlay uses the icon specified in the **defaulticon** command.

If the drive does not contain an AutoPlay-enabled compact disc, the system uses a default icon in its place.

See also **icon**

#### icon

```
icon=filename.ico
```

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Specifies a file that contains the information for the icon that represents the AutoPlay-enabled compact disc in the Windows user interface. The file name specified with this command must be located in the same directory as the file name specified by the **open** command.

*filename.ico*

Name of the file containing the icon information. You also can specify a .bmp, .exe, or .dll file. If a file contains more than one icon, specify the resource number (index) of the icon in the file to use.

If the drive does not contain an AutoPlay-enabled compact disc, the system uses a default icon in its place.

The following example specifies the second icon in a file to represent a compact disc. The first icon's index is set to zero.

```
icon=filename.exe 1
```

See also **defaulticon**

## open

```
open=dir\filename.exe
```

Specifies the path and file name of the application that AutoPlay runs when you insert the compact disc in a CD-ROM drive.

*dir\filename.exe*

Path and file name of any executable file to run or document to open when the compact disc is inserted. If the file is a document, Windows starts the application associated with the specified document. If no path is specified, Windows looks for the file in the root directory on the compact disc. You can specify a relative path to locate the file in a subdirectory.

You also can include command-line parameters that AutoPlay passes to the application when it runs.

Use this command to open a startup application that provides instant feedback to the user. For more information about startup applications, see *Opening a Startup Application*.

## shell

```
shell=verb
```

Changes the default entry of the shortcut menu to the specified custom command.

*verb*

Abbreviated form of a custom command. The custom command must be defined in the Autorun.inf file.

AutoPlay is the default menu item defined for any AutoPlay-enabled disk.

When the user double-clicks the icon for your compact disc, the command associated with *verb* is carried out.

See also **shell\verb**

## shell\verb

```
shell\verb\command=filename.exe  
shell\verb=Menu Item Name
```

Specifies a custom command listed in the shortcut menu for the icon. The first line identifies the executable file that performs the command. The second line specifies the custom entry of the shortcut menu.

### *verb*

Abbreviated form of the command. This parameter associates a command with the executable file name and the menu item. It must not contain embedded spaces. You will not see *verb* on the shortcut menu unless *Menu Item Name* is omitted from the Autorun.inf file.

### *filename.exe*

File name of the application that performs the custom command.

### *Menu Item Name*

Menu item text that can contain mixed-case letters and spaces. You also can set a shortcut key for the menu item by preceding one of the letters in the item with an ampersand (&).

When you right-click an icon in the Windows user interface, a shortcut menu for that icon appears. If an Autorun.inf file is present on a compact disc, Windows automatically adds AutoPlay to the shortcut menu for the disc's icon. It also sets AutoPlay as the default behavior. Double-clicking the icon starts whatever is specified in the **open** command.

To add the command ReadMe to the shortcut menu for your product and to make the letter "M" the shortcut key, include the following in the Autorun.inf file:

```
shell\readit\command=notepad abc\readme.txt  
shell\readit=Read &Me
```

See also **shell, open**