

Exhibit 8

ADOBE® FLASH® PLAYER 10.1

Administration Guide



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Adobe® Flash® Player 10.1 Administration Guide

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Chapter 1: Introduction

Why install Flash Player?

Adobe® Flash® Player is the software that allows computers to play multimedia content contained in SWF (pronounced “swiff”) files, which are the main type of file used by Flash Player. This content can be created by Adobe® Flash® Professional, Adobe® Flex® Builder™, or other tools that output the SWF file format. SWF content can range from simple animations to online advertisements to complete applications that communicate over the Internet. Flash Player is available in multiple forms. In its most popular form, it is embedded in a web browser as a plug-in or an ActiveX control.

You may have been asked to deploy Flash Player in your network environment because someone in your company has built a SWF application for business use, or because there is external SWF content that employees want to have access to.

To deploy the player, you must first acquire a license to do so. Distribution licenses are free of charge and can be acquired through the online licensing application at www.adobe.com/licensing/distribution. For answers to questions regarding Flash Player licensing and deployment, see the Adobe Player Distribution FAQ at www.adobe.com/licensing/distribution/faq.

Additional resources

The following sites provide information about some general topics related to the Flash Platform, Flash Player, and design and development tools. For information about sites related specifically to issues covered in this document, see the chapter that covers that issue. For example, for an extensive list of resources specific to the topic of security, see “[Additional security resources](#)” on page 40 in “[Security considerations](#)” on page 36.

For the latest version of this guide, see the Adobe Flash Player Administration Guide section of the Flash Player Developer Center at www.adobe.com/go/flash_player_admin.

Flash Player and deployment

The following sites contain information and links to help you understand how to deploy Flash Player and work with SWF files.

- The Flash Player Support Center at www.adobe.com/support/flashplayer/ provides information on a number of topics relating to installing, using, and deploying Flash Player. It also contains links to documents that can answer just about any question you might have about Flash Player, locations for downloading the player, user forums, and so on. Much of the information in this document is excerpted from documents available from the Support Center.
- The Flash Player Developer Center at www.adobe.com/devnet/flashplayer provides extensive information about Flash Player, including development and deployment of applications. The content includes Tech Notes, articles, and tutorials.
- The SWF File Format Specification at www.adobe.com/go/swf_file_format documents the SWF file format and describes how to write SWF files.
- The Flash Player Release notes at www.adobe.com/support/documentation/en/flashplayer/releasenotes.html contain information about features, fixes and improvements, and known issues for each version of the player.

Design and development tools

Adobe provides the following tools for developing SWF files (the file format that executes in Flash Player):

- Adobe Flash Professional (www.adobe.com/products/flash/)

In Flash Professional, designers and developers create FLA files that contain graphical elements, a timeline, and ActionScript code. Both ActionScript 2.0 and ActionScript 3.0 are supported. FLA files are compiled into SWF files.

- Adobe® Flash® Builder™ (www.adobe.com/products/flashbuilder/)

In Adobe® Flash® Builder™ 4 (formerly Adobe® Flex® Builder™), developers and designers create MXML files and FLA files using the open source Flex framework. They can also use ActionScript 3.0. Both MXML and ActionScript compile into SWF files.

- Adobe® Flex® (www.adobe.com/products/flex/)

In Flex, developers create MXML files that describe the visual and code elements of their applications. They can also use ActionScript 3.0. Both MXML and ActionScript compile into SWF files.

Chapter 2: Flash Player environment

Player files and locations

Adobe Flash Player is normally deployed as a browser plug-in or ActiveX control. For each player environment, two versions of Flash Player are available—a “Content Debugger” version for developers, and a “Release” version for end users. The Content Debugger player is installed with the development environment. This player implements the same feature set as the Release player, but also displays run-time errors during compilation. Each of these implementations is described in this section.

Note: There is also a stand-alone player, but it's usually installed by the development tools, not deployed by administrators.

Firefox/Mozilla plug-in architecture

Mozilla, Mozilla-based browsers (such as Firefox), and the Safari browser on the Macintosh use this plug-in.

Windows plug-in filenames and locations

On Windows, files named NPSWF32.dll and flashplayer.xpt are installed. These files are placed in the following directory, along with the ActiveX control. For example:

```
%WINDIR%\System32\Macromed\Flash
```

Note: The %WINDIR% location represents the Windows system directory, such as C:\WINDOWS.

For 64-bit machines, the System directory is SysWow64, instead of System32.

The Windows plug-in installer also places a broker application called FlashUtil10h_Plugin.exe in the same directory as the Flash Player Plug-in DLL. The 10h will change with each release, similar to the ActiveX FlashUtil file.

NPSWF32_FlashUtil.exe includes functionality required by Windows Vista, Windows 7, and as an uninstall mechanism.

Macintosh plug-in filenames and locations

On the Macintosh, files named Flash Player.plugin and flashplayer.xpt are installed. These files are placed in the Internet plug-ins folder in the Library folder.

Linux plug-in filenames and locations

On Linux, files named libflashplayer.so and flashplayer.xpt are installed. The install location is dependent upon the browser, Linux distro, and distro version.

ActiveX Control on Windows

The ActiveX control is used by Microsoft Internet Explorer as well as certain other applications, such as Microsoft Powerpoint and Yahoo Messenger. The player is an OCX file whose name reflects the version number and unique letter for each subsequent release (if any) of the player. For example, for the initial release of Flash Player 10, the Release player filename is Flash10a.ocx and the Content Debugger player filename is FIDbg10a.ocx. For Flash Player 10.1, both the Release and Content Debugger versions are called Flash10h.ocx.

The OCX files are stored in the following directory:

`%WINDIR%\System32\Macromed\Flash`

Note: The `%WINDIR%` location represents the Windows system directory, such as `C:\WINDOWS`.

For 64-bit machines, the System directory is `SysWow64`, instead of `System32`.

Additional files

When Flash Player is installed on Windows, certain utility files are installed that perform special functions for Flash Player, including auto-update notification and brokering certain processes on Windows Vista. These utility files also provide developers a way to easily switch between player versions during testing. This functionality is briefly described in this section, and more information is available in the TechNote entitled “Installation issues when switching between release and debugger versions during development and testing” at www.adobe.com/go/4da116d3.

Note: In Flash Player 10.1, there are no longer any special instructions for switching between Release and Debugger Players. The tech note only applies to pre-FP10.1 Players.

FlashUtil.exe and GetFlash.exe

A utility file named `FlashUtil10h_ActiveX.exe` is installed with Flash Player in the `%WINDIR%\System32\Macromed\Flash` directory. For 64-bit machines, the System directory is `SysWow64`, instead of `system32`. The utility is versioned with the control; for example, `FlashUtil10h_ActiveX.exe` is installed with the control `Flash10h.ocx`. The `FlashUtilnn.exe` file is associated with the auto-update functionality, uninstallation, and brokering the interaction between the ActiveX control and Internet Explorer (brokering only occurs on Windows Vista and above).

When the browser plug-in is installed, a similar application named `FlashUtil10h_ActiveX.exe` is installed. This file is associated only with the browser plug-in, and is separate from the `FlashUtil10h_ActiveX.exe` used for the ActiveX control. There is also a new file called `FlashUtil10h_ActiveX.dll`.

Data formats used

Several file types are created or read by Flash Player. These file types are summarized in the following list.

- **SWF:** The SWF file format (pronounced “swiff”) is an efficient delivery format that contains vector graphics, text, video, and sound. Flash Player executes SWF files. SWF files can be loaded into Flash Player dynamically by instructions in other SWF files.
- **CFG:** These are configuration files that network administrators and developers can deploy along with Flash Player to customize Flash Player settings and address certain security issues for all users. For more information, see “Administration” on page 19. End users can also create CFG files to address certain security issues for that specific user; see “The User FlashPlayerTrust directory” on page 35.
- **SWC** (pronounced “swik”): These are SWF files that developers deliver as components for use when working in the Flash authoring environment.
- **SO:** Shared object files are used by Flash Player to store data locally. For example, a developer may create a game application that stores information on high scores. This data may be stored either for the duration of a Flash Player session, or persistently across sessions. In addition, Flash Player creates a persistent shared object that stores player settings, such as the amount of disk space a web site can use, if any, when creating shared objects. Shared object files are stored in the following locations:

Windows Vista and Windows 7 `C:\Users\username\Application Data\Macromedia\Flash Player\#SharedObjects\randomDirectoryName`

Flash Player environment

Windows 2000 and Windows XP C:\Documents and Settings\username\Application Data\Macromedia\Flash Player\#SharedObjects\randomDirectoryName

Macintosh /Users/username/Library/Preferences/Macromedia/Flash Player/#SharedObjects/randomDirectoryName

Linux GNU-Linux ~/.macromedia#SharedObjects/randomDirectoryName

Shared objects are stored in a directory with a randomly generated name for security purposes. Flash Player remembers how to direct a SWF file to the appropriate location, but users of other applications outside Flash Player, such as a web browser, cannot use those applications to access the data. This limitation ensures that the data is used only for its intended purpose.

- MP3 - The compressed audio file format.
- JPG, PNG, and GIF- Image file formats. The TIF and BMP formats are not directly supported for use in SWF files.
- FLV - Flash Player compressed video format.
- FXG - Flash XML graphics format. An XML-based graphics interchange format for the Flash Platform.
- XML (eXtensible Markup Language) - Used for sending and receiving larger amounts of data with structured text.
- MXML - The XML-based language that developers use to lay out components in Flex applications.

Note: If you block access to any of these file types, certain functionality of Flash Player may be disabled.

Network protocols used

Flash Player can use the following network protocols:

- HTTP
- HTTPS
- RTMP (Real Time Messaging Protocol) - a proprietary protocol used with Flash Media Server to stream audio and video over the web. The default connection port is 1935.
- RTMPT - RTMP tunneling via HTTP. The default connection port is 80.
- RTMPS - RTMP tunneling via HTTPS. The default connection port is 443. (For more information about using the RTMP protocols, see the TechNote entitled “HTTP Tunneling Protocols” at www.adobe.com/go/tn_16631.)
- SOAP - Simple Object Access Protocol
- UNC - Universal Naming Convention
- TCP/IP - Transmission Control Protocol/Internet Protocol
- FTP - File Transfer Protocol
- SMB - Server Message Block. SMB is a message format used by DOS and Windows to share files, directories, and devices. Flash Player can load animations and SWF files from remote SMB shares. Flash has restrictions on what Flash SWF files loaded from SMB shares are allowed to do.
- SSL - Secure Sockets Layer
- AMF - ActionScript Message Format

Player processes

Most often, Flash Player runs as a browser plug-in. When Flash Player operates in this mode, it does not launch any new processes on the end user's computer. When run as a stand-alone player, it launches a process named FlashPlayer.exe. The one exception to this statement is when content is played back using Internet Explorer on Windows Vista or above. In this case FlashUtil10h_ActiveX.exe will be in the process list.

Flash and Flex developers can package their SWF files into stand-alone EXE files, called projectors. When a projector is run, it launches a single process, named for the projector executable filename.

Other processes are created when Flash Player auto update occurs. GetFlash.exe or FlashUtil10h_ActiveX.exe will be running during an auto update request and subsequent downloading and installing of the updated player. FlashUtil10h_ActiveX.exe or FlashUtil10h_Plugin.exe processes will be visible when the Flash Player is uninstalled on Windows via Add/Remove Programs.

Player versions

Before deploying the player, you might want to know what version is already installed on an end user's machine. An easy way to determine the version of Flash Player installed is to navigate to www.adobe.com/products/flash/about; this page displays a message stating which version is installed. Or, while a SWF file is playing, right-click (Windows or Linux) or Command-click (Macintosh) on the SWF content and then choose "About Flash Player" from the context menu.

On the Macintosh, you can navigate to the Flash Player.plugin file located in the /Library/Internet plug-ins folder, then Command-click and choose Get Info. The version number is available on the General menu.

On Windows, you can determine which version of the ActiveX control is installed by navigating to the directory where the OCX file is located (see "ActiveX Control on Windows" on page 3 for the default location). Right-click on the OCX file and choose Properties, then inspect the value in the Version tab. If the OCX file isn't installed in the default location, you can determine its location and name by inspecting the following registry key, which is created when the OCX control is registered:

```
HKEY_CLASSES_ROOT\CLSID\{D27CDB6E-AE6D-11cf-96B8-444553540000}\InprocServer32
```

Similarly, you can determine the Plug-in version by examining the version tab of the NPSWF32.dll file, which is located in the same folder as the ActiveX control.

End users can view the currently installed version by visiting www.adobe.com/products/flash/about with their browser, or by right-clicking on a SWF file and selecting "About Flash Player..."

For information on how to incorporate player version detection into web sites, see the "Detection and Installation" section at the Flash Player Developer Center (www.adobe.com/devnet/flashplayer/detection_installation.html).

If you want to learn which version of Flash Player is installed on an end user's machine without going to each machine individually, you or a developer at your site can create and distribute a SWF file that implements the `System.Capabilities.version` API and reports the results to a database using a command such as HTTP GET or POST. This technique is useful for activities such as collecting statistics on how many users have which version of Flash Player.