

# Lesson 5: Multimedia on the Web

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## **Objectives**

By the end of this lesson, you will be able to:

- ✦ 1.5.7: Download and store files using a Web browser.
- ✦ 1.5.10: Install and upgrade common plug-ins, add-ons and viewers (e.g., Adobe Reader, Adobe Flash Player, Microsoft Silverlight, Windows Media Player, Apple QuickTime) and identify their common file name extensions.
- ✦ 1.5.11: Use document and multimedia file formats, including PDF, PNG, RTF, PostScript (PS), AVI, MPEG, MP3, MP4, Ogg. Convert between file formats when appropriate.

## Pre-Assessment Questions

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1. Briefly describe C++.

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2. Which statement about vector graphics is true?

- a. Vector graphics are saved as sequences of vector statements.
- b. Vector graphics have much larger file sizes than raster graphics.
- c. Vector graphics are pixel-based.
- d. GIFs and JPGs are vector graphics.

3. Name at least two examples of browser plug-ins.

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## Introduction to Multimedia on the Web

**NOTE:**

Multimedia use on the Web has been hindered by bandwidth limitations. Until all Internet users have high-speed connections (broadband or higher), the potential for high-quality live video, movies on demand or television-like broadcasts will not be met.

Multimedia on the Web has expanded rapidly as broadband connections have allowed users to connect at faster speeds. Almost all Web sites, including corporate sites, feature multimedia content and interactive objects. For instance, employee orientation sessions, audio and video memos, and training materials are often placed on the Internet or corporate intranets.

Nearly all network-connected devices, such as PCs, tablets, smartphones and smart TVs, can view online interactive multimedia. Each device includes a sound card, speakers and a video card. In some cases, small applications called plug-ins are required for browsers to view content that is not supported. Browser plug-ins are commonly used to play streaming audio and video, and interact with multimedia objects. As an IT professional, you should understand the elements required for browsers to view these items.

This lesson will introduce you to multimedia content and several popular plug-ins that allow browsers to display it. It will teach you to install and operate some of the most widely used plug-ins. You will also learn how to download and store various types of files from the Internet.



### CIW Online Resources – Movie Clips

Visit CIW Online at <http://education.Certification-Partners.com/CIW> to watch a movie clip about this topic.

*Lesson 5: Multimedia on the Web*

## Objects, Active Content and Languages

**object**

An element on a Web page that contains data and procedures for how that item will react when activated. On a Web page, an object is typically a multimedia presentation.

**Objects** enable Web authors to include multimedia effects, also called active content, on their sites. These objects can play sounds, show video clips and animation sequences, or demonstrate ideas in 3-D simulations. In addition to making the user's Web experience more enjoyable, these multimedia capabilities can greatly enhance a site's educational value. Many businesses expect to profit from this active approach to Web site design and construction. The following sections discuss various types of programming and scripting languages used to create objects and active content, and their relationships to one another.

### C

C is a programming language used primarily to create operating systems and applications. For instance, many UNIX operating systems have been developed using C. Because **object-oriented programming (OOP)** is becoming popular, C is being replaced by C++ and Java. In object-oriented programming, a program is handled as a collection of individual objects that perform separate functions, rather than as a sequence of statements that performs a specific task.

### C++

C++ is a superset of the C language that uses object-oriented programming. Although the names are similar, C++ uses a completely different set of programming concepts than C uses and is considered the best language for creating large applications.

**object-oriented programming (OOP)**

Programming concept based on objects and data and how they relate to one another, instead of logic and actions; C++ and Java are OOP languages.

**NOTE:**

C++ combines the traditional C language with object-oriented programming.

**Java**

An object-oriented programming language developed by Sun Microsystems that is fully cross-platform functional.

**applets**

Small programs written in Java, which are downloaded as needed and executed within a Web page or browser.

**NOTE:**

The term applet refers to many small programs, such as utility programs and simple text editors. When a Java program is run from a browser, it is called a Java applet.

**dynamic**

Always changing.

**interactive**

The characteristic of some hardware and software, such as computers, games and multimedia systems, that allows them to respond differently based on a user's actions.

**event-driven**

Reacting to particular user actions or the browser's completion of a specific task.

## Java

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**Java** is an object-oriented language developed by Sun Microsystems. Java concentrates on distributed objects over a network (for example, the Internet), and is often used when data needs to be shared across the network.

Java can be used on the server side, or on the client side. An end user will never see Java used on the server side. However, they will benefit from this code. When Java is used on the client side, the end user will see a Java applet.

## Java applets

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Java **applets** are programs written in the Java language and designed to run within a Web browser when accessed. Applets were the first technology developed for bringing program objects to the Web. Similar to ActiveX objects (discussed later in this lesson), applets animate pages, add functionality and interactivity, access multimedia services, and provide active content.

Java applets are miniature Java programs downloaded into a Web browser when a user requests a Web page. They are treated the same way as other Web-embedded objects and are displayed in the browser's content area. Your Web browser must be Java-enabled to run applets. Most browsers, including Google Chrome, Mozilla Firefox and Windows Internet Explorer, support Java applets.

Unlike static objects, such as non-animated GIF and JPEG images or hyperlinks, Java applets can be **dynamic** and **interactive**. Their special effects include the following:

- **Inline video, changing text, and animation** — dynamic objects that can be embedded in Web pages without the need for external helper applications or plug-ins.
- **Audio** — sound files played either when an applet is invoked or in response to user action.
- **User interaction** — action and responses between a user and the displayed applet. Examples of interactive applets include user-interface controls that allow the user to interact with an on-screen element, such as in a computer game.
- **Real-time data feeds** — transmissions that maintain an open connection between the server and an applet on a Web page, or periodically poll the server to update information displayed in the browser. Examples of real-time data feeds are online clocks and up-to-the-minute stock market tickers.

Applets can combine these properties to create complex but easy-to-use Internet applications.

## JavaScript

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The Web is **event-driven**. For example, when you click or select an element on a Web page, you have caused an event. Events include a mouse click, a mouse drag, text entered or a page loaded (or unloaded) in the browser. JavaScript is an event-driven scripting language because it is designed to react whenever an event occurs.

Traditional programming languages, such as C, cause events to happen, rather than reacting to events. By contrast, scripting languages are used within existing programs to extend those programs' capabilities. If you have ever written a macro in Microsoft Word or Excel to perform a task, you have already used a scripting language.

**NOTE:**

JavaScript evolved from the Netscape LiveScript language. LiveScript was first introduced with Netscape Browser 2.0. Later, the language became more compatible with Java and was renamed JavaScript. JavaScript can be used in conjunction with Java but does not require Java's programming overhead.

**LiveScript**

The Netscape-developed scripting language that was the predecessor to JavaScript.

JavaScript was the first scripting language developed exclusively for online content design. JavaScript syntax resembles that of traditional programming languages. These scripts can be placed within your Web document or in separate JavaScript files that can be called by your Web document. When your browser retrieves a page that incorporates JavaScript, it runs the scripts and performs the appropriate operations.

**JavaScript vs. Java**

Although the names are similar, JavaScript and Java are completely different languages and share no real similar features.

Java is an object-oriented programming language, whereas JavaScript (as the name suggests) is an object-based scripting language. An object-based scripting language derives functionality from a collection of built-in objects, but does not possess all of the functionality of an object-oriented programming language.

Java, developed by Sun Microsystems, can create stand-alone applications and Java applets. JavaScript, originally developed by Netscape Communications, has its origins in a scripting language called **LiveScript** and can add interactivity to Web pages.

JavaScript is not a stand-alone programming language like Java. However, like Java, JavaScript can be used on the server side or on the client side. Server-side JavaScript supports many of the rich features and functions of any server-side scripting language. However, easier-to-learn scripting languages such as PHP are more popular, and JavaScript is more typically used in client-side applications to add interactive features to Web pages. Server-side JavaScript does not need HTML to run, but client-side JavaScript must reside within or be called by HTML documents to run.

JavaScript complements Java by supporting most of Java's expression syntax and basic program flow controls. It also exposes useful properties of Java applets to JavaScript programmers.

**JScript**

JScript is the Microsoft version of JavaScript. Microsoft chose the name JScript due to trademark issues with Netscape, the developer of JavaScript. They are essentially the same language. Though based on the same code, JavaScript and JScript each have additional features not supported by the other.

JScript is built into Windows Internet Explorer; JavaScript is built into Mozilla Firefox. Because of the slight differences between JavaScript and JScript, programs written in JavaScript may not function properly within Internet Explorer, and programs written in JScript may not function properly within Mozilla Firefox.

**C#**

C# (pronounced "C sharp") is Microsoft's object-oriented programming language; it is Microsoft's answer to Java. Microsoft's .NET platform is designed to explicitly support C#, making the language very popular.

You can learn more about C# at the following sites:

- Microsoft MSDN (<http://msdn.microsoft.com>)
- Microsoft MSDN C# blog page (<http://blogs.msdn.com/csharpfaq>)

**NOTE:**

JScript and VBScript are fully supported in the Windows Internet Explorer browser, as you would expect. JScript incorporates Windows extensions that can take advantage of the Windows operating system.

**ActiveX**

An open set of technologies for integrating components on the Internet and within Microsoft applications.

**ActiveX**

**ActiveX** was first developed by Microsoft, but was then turned over to an independent organization, The Open Group. ActiveX is a strategic initiative that incorporates object-oriented programming tools and technologies. ActiveX is Microsoft's response to Java applets.

ActiveX technology enables authors to place interactive objects on their Web sites based on a common standard, and allows the objects to work together. With ActiveX, Web pages can include animation, audio, and video. Web content can be dynamic, providing current information on any topic, customized to the user's profile and preferences.

ActiveX is used to create ActiveX controls, which are self-contained programs that can be run anywhere on a network, including within a browser from the Internet. ActiveX controls are similar to Java applets, but officially only run in Internet Explorer and on the Windows operating system.

**Visual Basic Script (VBScript)****Visual Basic Script (VBScript)**

Scripting language from Microsoft derived from Visual Basic; used to manipulate ActiveX scripts.

**Visual Basic Script (VBScript)** is an object-based scripting language that Microsoft derived from its more powerful **Visual Basic** programming language.

VBScript can manipulate two types of objects. The first type is called a standard HTML object, which is an intrinsic object such as those found on a form: a display button, radio button, check box or password field. The second type of object, the ActiveX control, is more powerful and flexible. The ActiveX functions of an object are invoked by user action.

**Visual Basic**

The Microsoft graphical user interface (GUI) programming language used for developing Windows applications. A modified version of the BASIC programming language.



Microsoft VBScript is a vendor-specific scripting language. Unlike JavaScript, VBScript may not be supported by browsers other than Windows Internet Explorer.

**CIW Online Resources – Online Exercise**

Visit CIW Online at <http://education.Certification-Partners.com/CIW> to complete an interactive exercise that will reinforce what you have learned about this topic.

*Exercise 5-1: Programming languages used to create objects and active content*

**NOTE:**

ActiveX controls and Java applets running on a trusted site can provide a superior Web-browsing experience with minimal security risk.

**NOTE:**

See **Lab 8-2: Changing security settings in Mozilla Firefox.**

**Objects and Security Issues**

To work with downloadable active content such as Java applets and ActiveX objects, you need to understand the security issues involved and know how to protect yourself from hostile incursions.

Both ActiveX and Java applets allow information to be downloaded and run on your system. However, some content can cause problems ranging from inconvenience to loss of data.

Later in this course, you will learn how both Internet Explorer and Firefox provide control options to enable or disable the execution of Java programs and other active content. You will also learn how to disable active content entirely. This knowledge will allow you to choose the appropriate security setting for your personal computer or your company, and shield your system from dangerous content.

## HTML5 vs. Plug-ins

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Before discussing browser plug-ins in detail, you must be aware of Hypertext Markup Language version 5 (HTML5). HTML5 is the latest version of HTML and is gaining acceptance in the Web community. One of the major goals of HTML5 is to eliminate the use of browser plug-ins.



Figure 5-1: HTML5 logo

**NOTE:**

HTML5 is covered in more detail in the *CIW Site Development Associate* course.

HTML5 is a standard provided by the W3C. The practical benefit of this standard is that it gives designers, developers and browser creators a universal framework for embedding videos and other interactive content without first having to install a plug-in.

The HTML5 standard benefits end users because you do not have to worry about installing the latest plug-in. The browser's rendering engine and programming handle the video content. One drawback of HTML5, however, is that you must update your browser so that it supports HTML5.

Most current browsers support HTML5. However, a large percentage of multimedia content on the Internet is created for browser plug-ins. Adobe Flash is probably the most well-known plug-in for viewing multimedia content, such as videos and interactive content.

In an effort to reduce the number of plug-ins, HTML5 offers many options for developers. The following list includes several benefits:

- Introduces the <video> element, which is designed to eliminate the need to install third-party plug-ins (such as those for Adobe Flash or Apple QuickTime).
- Adds the <audio> element, which allows pages to seamlessly add audio files for events such as podcasts. No audio plug-in, such as Windows Media Center, is required to listen to music.
- Establishes ways to enable drag-and-drop capability for Web pages without using third-party add-ons. Many other interactive features that use JavaScript provide the same functionality as plug-ins.
- Allows **geolocation**, which is the ability for developers to retrieve the geographical location information for a client-side device. One example is using a mobile device's Global Positioning System (GPS) to determine the device's location, which allows Web services to be provided based on the client's location.

**geolocation**

An HTML5 application programming interface that allows developers to retrieve the geographical location information for a client-side device.

**cascading style sheets (CSS)**

Style sheet language that provides the formatting and "look" of a Web page or document written in a markup language.

To view the HTML5 specifications, go to: <http://dev.w3.org/html5/spec/Overview.html>

HTML5 can produce dynamic multimedia content with JavaScript and **Cascading Style Sheets (CSS)**. These technologies used together provide Web pages that easily adapt to smartphones, tablets, gaming devices and smart TVs, as well as to traditional PCs.

Apple co-founder Steve Jobs provided a great argument for using these technologies in his famous "Thoughts on Flash" blog. (Adobe Flash is a browser plug-in that provides multimedia such as video, animation, interactive games and audio.)

*"...we strongly believe that all standards pertaining to the web should be open. Rather than use Flash, Apple has adopted HTML5, CSS and JavaScript — all open standards. Apple's mobile devices all ship with high performance, low power implementations of these open standards. HTML5, the new web standard that has been adopted by Apple, Google and many others, lets web developers create advanced graphics, typography, animations and transitions without relying on third party browser plug-ins (like Flash). HTML5 is completely open and controlled by a standards committee, of which Apple is a member."*

**NOTE:**

Visit sites that use HTML5, CSS and JavaScript. Two examples are: <http://sophiehardach.com/> and [www.20thingsilearned.com/en-US/home](http://www.20thingsilearned.com/en-US/home)

Plug-ins drain system resources. As a result, plug-ins use additional CPU and battery power. This consideration is especially important for users on mobile devices, which depend upon battery power. Battery life can decrease as much as 40 percent on a mobile device when running a plug-in. HTML5 solves this issue by providing native support for animation, movies and other multimedia without the use of plug-ins. CSS and JavaScript are used instead.

Despite the plug-in backlash, they will be around for the foreseeable future, perhaps indefinitely. The Android operating system uses plug-ins such as Flash, as do Windows systems. It is extremely important that you are familiar with them.

## Introduction to Plug-in Technology

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As browsers have evolved, features that enhance their functionality have been included to support a large range of objects. Users can access the active content directly from the browser with **plug-ins**, such as Apple QuickTime and Adobe Flash players. Plug-ins, also called players, extend the capabilities of Web browsers. When you visit a Web site that requires a plug-in (or a more recent version of a plug-in that you already have installed), you may be prompted to download and install or reinstall the application so that you can view the Web page content properly.

**plug-in**

A program installed in the browser to extend its basic functionality. Allows different file formats to be viewed as part of a standard HTML document.

### What are plug-ins?

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Plug-ins are applications associated with a specific platform (such as Windows or Apple OS X) and sometimes with a specific browser (such as Chrome, Firefox or Internet Explorer). The primary goal of a plug-in is to provide efficient integration of multimedia formats with the browser and computer. Without this integration, a user would have to download multimedia files and play them back later with a separate application. Plug-ins allow multimedia data types to execute directly from a browser, allowing immediate viewing and listening, thus enhancing your Web experience.

Popular plug-ins include:

- **Adobe Flash Player** — renders Flash animation files using streaming delivery.
- **Microsoft Silverlight** — renders animation, vector graphics and multimedia files (audio, video) using streaming delivery.

**NOTE:**

Plug-ins originally opened a new window and ran as a separate application. Plug-in functions are integrated into the HTML file and recognized automatically by the browser.

**OBJECTIVE**

1.5.10: Plug-ins, add-ons and viewers



- **RealNetworks RealPlayer** — renders multimedia files (audio, video) using streaming delivery.
- **Apple QuickTime** — renders multimedia files using streaming delivery.
- **Windows Media Player** — renders multimedia files using streaming delivery.

Firefox plug-ins are called add-ons. Firefox add-ons will be discussed in detail later in this lesson. Popular add-ons include:

- **Live IP Address**
- **Flashblock**
- **User Agent Switcher**
- **WOT – Web of Trust**
- **Flash Killer**
- **Firebug**
- **Zotero**

## How do plug-ins work?

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### disk cache

Storage space on a computer hard disk used to temporarily store downloaded data.

### streaming media

A continuous flow of data, usually audio or video files, that assists with the uninterrupted delivery of those files into a browser.

When a browser encounters a file type that is not directly supported, it launches a plug-in application that retrieves the multimedia files from a server, similar to the way a browser retrieves standard Web pages. The files are then delivered to the client system for playback.

Instead of loading the entire file at once, many plug-ins retrieve a small portion at a time and store the data in the local **disk cache**. Using a cache, the plug-in delivers just enough information to build a continuous stream of data, called **streaming media**, which eliminates transfer delays. For instance, when you listen to a Web audio file, you may be hearing one part of the file while the next part downloads in the background. If you download an entire file before playing it, you are playing non-streaming media.

## Plug-in appearance

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Files that have been interpreted by a plug-in appear in one of three ways, depending on the file type and additional HTML tags. Some files will not function if additional HTML attributes are set. Following are the three appearance modes:

- **Full-screen** — The multimedia will completely fill the browser window's inner frame.
- **Embedded** — The multimedia appears as part of a larger document, in which the media or media player is visible as a rectangular sub-portion of a page. This mode resembles an embedded GIF or JPEG image, except the media can be live and/or dynamic, and may have its own embedded functionality. Many videos, such as YouTube or news story videos, are usually embedded files. The video is played within the browser window, as shown in Figure 5-2.

### NOTE:

The plug-in appearance section is not required knowledge. It is intended to describe the ways plug-ins are presented by the browser: full-screen, embedded, hidden or in a new window.

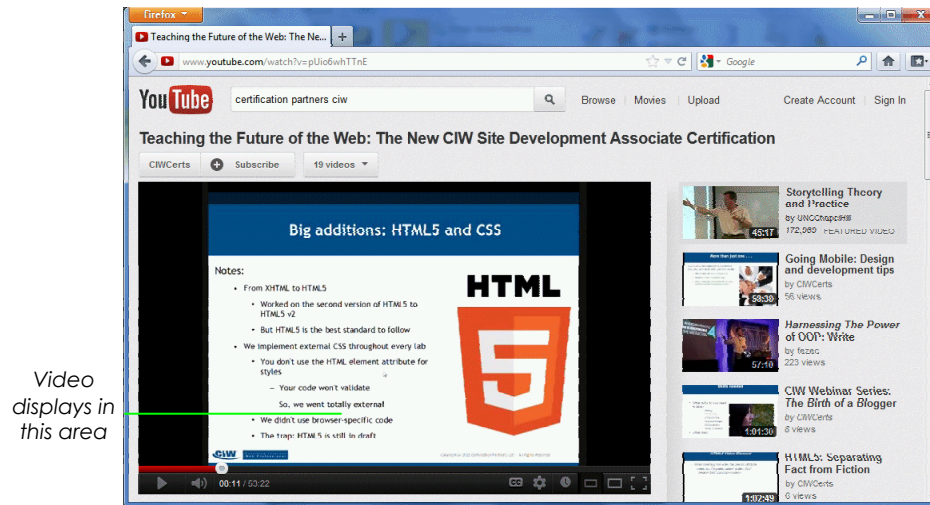


Figure 5-2: Embedded video

### Musical Instrument Digital Interface (MIDI)

A standard computer interface for creating and playing electronic music. It allows computers to re-create music in digital format for playback.

- **Hidden** — The multimedia and its players are not visible in the browser and run in the background. An example of a commonly hidden plug-in is a **Musical Instrument Digital Interface (MIDI)** player.
- **New window** — The plug-in opens in a new window, completely separate from the browser. The plug-in functions as a stand-alone application.

The browser appears largely the same despite the plug-in. Basic browser operations (such as navigation, history, file opening and so forth) apply to all pages, regardless of which plug-ins are required to view each page.

## Data Compression and Decompression

Before exploring particular audio and video player plug-ins, you should understand the basic principles of data compression. Compression is the reduction in size of data files. Audio and video files are compressed before they are transferred across the Internet to shorten the amount of time required to download them. Once files are received at the client system, they are decompressed so that they can be played (viewed and/or heard).

There are various ways to compress data, and many types of data can be compressed. You are probably already familiar with popular "zip" programs that compress text and images. Some image file formats such as GIF and JPEG are designed to reduce the size of image files.

### lossless compression

A type of data file compression in which all original data can be recovered when the file is decompressed.

Compression can be either lossy or lossless. With **lossless compression**, all the original data can be recovered when the file is decompressed. Lossless compression is used for compressing text and spreadsheet files, for example. The Graphics Interchange File (GIF) format provides lossless compression.

### lossy compression

A type of data file compression in which some file information is permanently eliminated.

**Lossy compression** permanently eliminates some of the information (especially redundant information). When the file is decompressed, only part of the original information is still there. Lossy compression is used for video and sound files, where certain amounts of information loss is hard to detect and is therefore not noticeable. The JPEG file format, which is used extensively for photographs on the Web, uses lossy compression. When you save an image file in JPEG format, you can specify how much loss you want to allow. Generally, you must find a balance between image quality and file size.

**codec**

A compression/decompression algorithm used by modern video and audio player plug-ins.

Compression is performed by a program that uses an algorithm to specify compression or decompression instructions for a given file. Multimedia players (such as RealPlayer, Windows Media Player and QuickTime player) and HTML5 use special algorithms called **codecs** to create streaming media.

Codec is an abbreviation for compression/decompression. Media files on the Web are compressed, and when you download them, they must be decompressed so that you can play them. Several standard codec schemes are employed on the Internet today, and new ones are added regularly. Players are equipped with these standardized codec schemes; as new codecs become popular, you can update your player's store of codecs. The store of codecs is updated when you upgrade your plug-in.

## Plug-in Installation

**OBJECTIVE**

1.5.10: Plug-ins, add-ons and viewers

Although plug-in installation procedures are quickly becoming standardized, unpredictable results can occur. This uncertainty exists because so many different configurations are possible depending on the user's choice of browser, operating system and plug-in. The two ways to install plug-ins are online and offline.

### Online installation

Online installation usually occurs with the browser open. Although certain Firefox plug-in installation files support online installation, many must be installed offline. Internet Explorer also installs many plug-in types without prompting the user when unsupported file types are encountered.

### Offline installation

Offline installation requires the user to download the plug-in file, quit the browser and start the installation file. When installation is complete, the computer may need to be restarted before the changes take effect. In the case of offline installation, you must read the installation instructions carefully before starting the download.

### Installing and updating plug-ins

Chrome, Internet Explorer and Firefox include several native plug-ins. The plug-ins are automatically installed with the browser. As mentioned earlier, when you visit a Web site that requires a plug-in (or a more recent version of a plug-in you already have), you may be prompted to download and install it. To avoid interrupting your Web browsing to download a plug-in every time you need one, you can visit several download sites in advance and install the most recent versions of popular plug-ins.

It is advisable to occasionally upgrade plug-ins from the appropriate vendor's site. Upgrades usually include increased functionality and security updates.



### CIW Online Resources – Course Mastery

Visit CIW Online at <http://education.Certification-Partners.com/CIW> to take the Course Mastery review of this lesson or lesson segment.

*IBA Lesson 5 - Part A*

## Types of Plug-ins

### OBJECTIVE

1.5.10: Plug-ins, add-ons and viewers

For many years, technology has allowed users to download and play back high-quality audio and video from the Internet. In the following pages, you will learn about several types of multimedia and their required plug-ins.

Various plug-ins are available, and each one can handle different file types, with some overlap. For example, both QuickTime and Windows Media Player can play MP3 files. Most of these applications will prompt you to associate certain file types with the plug-in by default. The default association will display the plug-in icon next to the files of the associated type in Windows Explorer, and selecting an associated file will launch the default plug-in. However, you can still open a file using the non-default application.

### Adobe Flash Player

The Adobe Flash Player allows browsers to view movies created with the Flash application. Flash movies offer full-screen navigation interfaces, are resizable to various display sizes and resolutions, and they can play as they download.

The Flash authoring software allows you to create animation by using **vector graphics**. Think of vector graphics as mathematical shapes. A vector graphic is saved as a sequence of vector statements, which describes a series of points to be connected. The graphics you are probably most familiar with, GIFs and JPEGs, are raster graphics, which are images that map bits directly to a display space (think of a grid of x and y coordinates on a display space). Raster graphics are pixel-based, and as such are much larger files than vector graphics. When the vector images are downloaded, they are rasterized (converted into raster images) as they arrive and the animation displays in the player.

The advantages of using vector graphics are that the files are relatively small (resulting in shorter download time) and they are easily resized without affecting image quality. Flash files use an .swf file name extension.

Flash has been ideal for the Internet; complex animations can be downloaded quickly because of their small file sizes. At the time of this writing, Google Chrome had Adobe Flash built in. Firefox and Internet Explorer require a manual installation.

In the following lab, you will use the Flash Player with Mozilla Firefox. Suppose the marketing manager of your company wants to view Flash movies in his browser so he can decide whether to invest time and money to create similar products for the company Web site. You can download and install Adobe Flash Player in his browser so that he can view the files.



#### Lab 5-1: Using Adobe Flash Player with Mozilla Firefox

### NOTE:

See **Optional Lab 5-1: Using Adobe Flash Player with Windows Internet Explorer**.

In this lab, you will navigate to the Adobe Web site, and download and install the Adobe Flash Player.

*Note: You may require access to an account with administrative permissions to install this software.*

1. Open **Firefox**.
2. Enter the URL ***www.adobe.com/downloads/***. The Adobe Downloads page will appear, as shown in Figure 5-3.

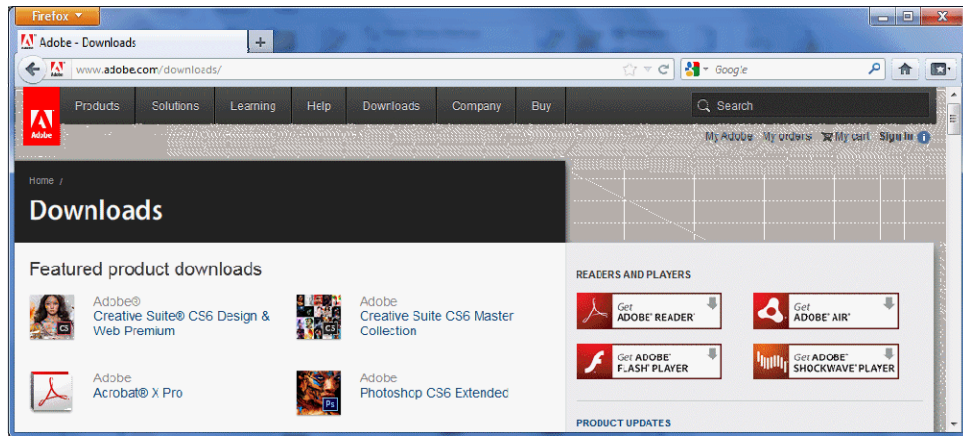


Figure 5-3: Adobe Downloads page

3. Click the **Get Adobe Flash Player** button to display the Adobe Flash Player installation page. The Adobe Flash Player download page appears.
4. Deselect the **Yes, install the free McAfee Security Scan Plus...** check box. Click the **Install Now** button.
5. Click the **Agree and Install Now** button, if necessary. Firefox displays a dialog box similar to the one shown in Figure 5-4.

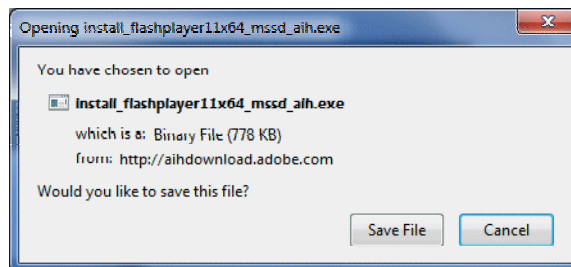


Figure 5-4: Installing Adobe Flash Player

6. Click the **Save File** button to save the installation file to the Downloads folder on your hard drive and display the Downloads window, shown in Figure 5-5. The Downloads window confirms that the installation file was saved to your hard drive.

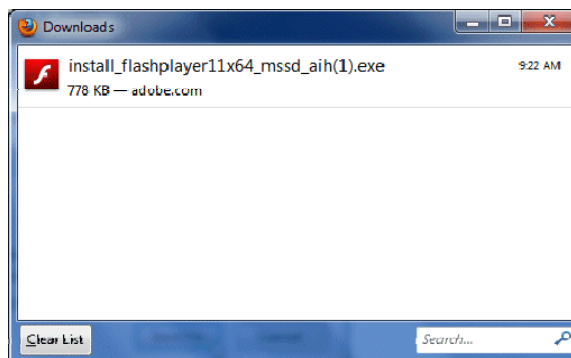


Figure 5-5: Downloads window

7. In the Downloads window, double-click **install\_flashplayer.exe**. The file name will vary depending on which version you are downloading. Click **Run** in the Security

Warning dialog box that appears asking if you want to launch the executable file. The User Account Control dialog box will appear.

8. In the User Account Control dialog box, click **Yes** to allow the program to make changes to the computer.
9. The Adobe Flash Installer will download and install the plug-in. You may be requested to close Mozilla Firefox in order to continue. Close **Firefox** and the **Downloads** window. Click the **Retry** button.
10. When the installation is complete, click **Finish**.
11. Now, you will explore the capabilities of the Flash Player. Open **Firefox**.
12. Enter the URL [www.adobe.com/customershowcase.html](http://www.adobe.com/customershowcase.html). The Customer Showcase screen appears, as shown in Figure 5-6. Notice that the main video (e.g., *The Adobe Customer Program* in the figure) and some of the smaller videos below the main video have play buttons (right-pointing arrows) in the lower-left corners of their respective screens.

**NOTE:**

You may be asked to close Firefox before you can install the Flash Player.

**NOTE:**

If necessary, navigate through the showcase to make sure you experience the movies and sounds.

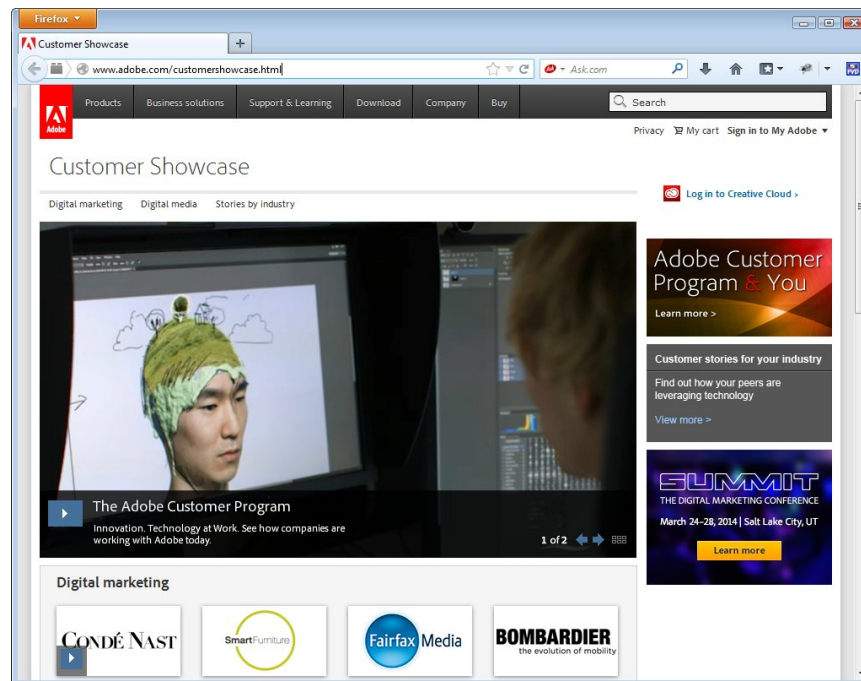


Figure 5-6: Adobe Customer Showcase

13. Click the **Play** button for the main video. Explore the showcase to see how Web sites are using the Adobe Flash technology. What do you notice about each site? What do you like or dislike? Does Flash enhance your Web-viewing experience?
14. Close **Firefox** (close all tabs).

## Microsoft Silverlight

Microsoft Silverlight is a software development tool used to write and run Internet applications. In order to run the applications in a browser, the Microsoft Silverlight plug-in must be installed.

Silverlight originally focused on streaming audio and video, but now supports graphics, animations and almost any multimedia. It can run in browsers that operate under Windows, Apple's OS X, and Windows Phone. Silverlight is Microsoft's response to Adobe Flash.

In the following lab, you will install the Silverlight plug-in. Suppose a product development manager in your company wants to be able to play a Silverlight-created animation that highlights the company's new product during an upcoming meeting. You can install the Silverlight plug-in on the computer system in the conference room for her.



### Lab 5-2: Using the Silverlight plug-in with Google Chrome

**NOTE:**

Vendor sites change frequently. The steps presented in this lab may need modification depending on the current design of the vendor site. Be sure that you locate and download the correct product.

In this lab, you will use the Silverlight plug-in to view multimedia content in Chrome.

*Note: Students may require an account with administrative permissions to install this software.*

1. Open **Chrome** and access the Silverlight Web site at [www.microsoft.com/silverlight/](http://www.microsoft.com/silverlight/). Click the **Download Now** button. Take the necessary steps to download the latest version of the plug-in to your Downloads folder.
2. In the Downloads window, double-click the **Silverlight** executable file, and click **Run** to begin the installation process. In the User Account Control dialog box, click **Yes** to proceed with the download.
3. When the Silverlight Setup Wizard appears, read the license agreement and accept it by clicking the **Install Now** button. Upon completion, click **Close**.
4. Restart **Chrome**, as directed by the installation, for the changes to take effect.
5. Go to the Silverlight Show Showcase at [www.silverlightshow.net/Showcase](http://www.silverlightshow.net/Showcase), shown in Figure 5-7. Explore the showcase to see how Web sites are using this technology. What do you notice about each site? What do you like or dislike? Does Silverlight enhance your Web-viewing experience?

**NOTE:**

You will have to click a few links before being able to stream audio and video. The steps presented in this lab may need modification, as links to streaming audio and video often change.



Figure 5-7: Silverlight Show Showcase

## 6. Close Chrome.

## Apple QuickTime

### QuickTime

A plug-in developed by Apple Computer for storing movie and audio files in digital format.

**QuickTime** is a plug-in created by Apple Computer for running video and audio files. QuickTime is available for both Windows and OS X systems. This plug-in lets you see and hear QuickTime content in your browser window. It can be downloaded from [www.apple.com/quicktime](http://www.apple.com/quicktime). Many samples, such as movie previews, can be viewed at the site after you download the product.

The QuickTime plug-in works with existing QuickTime movies and other formats that can use a fast-start feature. This feature presents the first frame of the movie almost immediately and begins playing the movie before it has been completely downloaded, much like a streaming format.

### QuickTime Movie

#### QuickTime Movie (MOV)

Standard file format for Apple QuickTime; uses the .mov, .moov or .qt file name extension.

The **QuickTime Movie (MOV)** file format was created by Apple and is supported by all QuickTime versions. Video, animation, text and sound are combined into one file. QuickTime files are identified by a .mov, .moov or .qt file name extension.

### QuickTime VR

QuickTime Virtual Reality (QTVR) is a virtual reality plug-in from Apple that is installed with QuickTime. It can expand a two-dimensional photograph into a three-dimensional image. 2-D and 3-D images can be explored in 360-degree panoramas and can include interactive elements. Today QTVR is usually used for panoramas. Figure 5-8 shows a QTVR panorama.

#### NOTE:

Media players such as QuickTime have become available for third- and fourth-generation wireless devices.





Figure 5-8: QuickTime VR panorama

For more information about QTVR, visit [www.apple.com/quicktime](http://www.apple.com/quicktime).

In the following lab, you will install the QuickTime plug-in. Suppose that the marketing team wants to compare QuickTime movies with Flash movies in order to decide which movie format to support on the corporate Web site. Flash is already installed on all corporate computers, but QuickTime is not.



### Lab 5-3: Using the Apple QuickTime plug-in with Mozilla Firefox

**NOTE:**

Vendor sites change frequently. The steps presented in this lab may need modification depending on the current design of the vendor site. Be sure that you locate and download the correct product.

In this lab, you will download and install QuickTime, and view a QuickTime movie.

*Note: Students may require an account with administrative permissions to install this software.*

1. First, you will download the plug-in. Open **Firefox** and go to [www.apple.com/quicktime/](http://www.apple.com/quicktime/).
2. Click the **QuickTime Free Download** button.
3. Ensure that your operating system is listed. Deselect the **Keep Me Up To Date With Apple News, Software Updates...** check box, then click the **Download Now** button. Take the necessary steps to download the plug-in to your Downloads folder.
4. In the Downloads window, double-click **QuickTimeInstaller.exe**, and click **Run** to begin the installation process. If the Security Warning dialog box appears, click **OK** to proceed with the download.
5. When the QuickTime Installer appears, follow the instructions in the Installer to complete the installation. Accept the license agreement when prompted to do so. Click **Finish** when the installation is complete. Close the **Downloads** window.
6. Go to the iTunes Movie Trailers site at <http://trailers.apple.com/trailers/>, shown in Figure 5-9. This site provides trailers in QuickTime format for upcoming and currently playing films. Explore the site to view QuickTime videos. What do you notice about each video? What do you like or dislike? Does QuickTime enhance your Web-viewing experience?

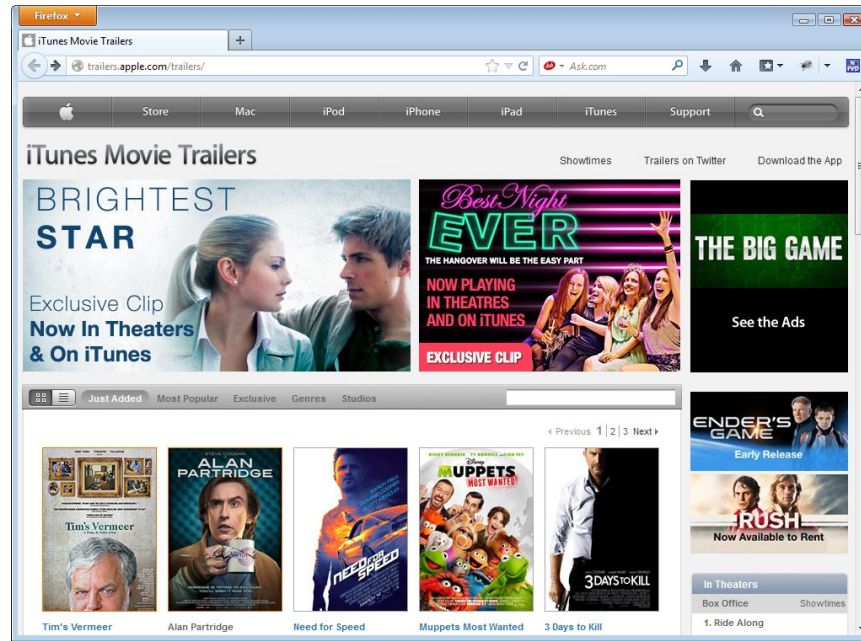


Figure 5-9: iTunes Movie Trailers — QuickTime movies

## 7. Close **Firefox**.

## Windows Media Player

**NOTE:**  
Windows Media Player is installed by default during the Windows operating system installation. It is shipped with Windows.

The Microsoft Windows Media Player is a standards-based plug-in that plays streaming audio and video. It is installed with the Windows operating system. It can display both live and on-demand content.

Windows Media Player is available for Windows and Apple OS X systems. Windows Media Player includes a feature that will automatically look for available updates, which can be found at <http://windows.microsoft.com/en-US/windows/products/windows-media>. You can also go directly to the Web site to download and install the update.

The file name extensions normally associated with Windows Media Player include .wma (Windows media audio) and .wmv (Windows media video), and the player also supports several video and audio file formats (such as .avi, .mpeg, .midi, .wav) discussed later in this lesson.

In the following lab, you will view movie clips using the Windows Media Player plug-in. Suppose your company's marketing manager wants to view a competitor's Web site movies, which are in WMV format. The IT supervisor has assigned you to show the marketing manager the easiest way to do this by using the Windows Media Player plug-in that is included with Windows.



### Lab 5-4: Using the Windows Media Player plug-in with Chrome

In this lab, you will use the Windows Media Player plug-in to view movies.

1. Open **Chrome** and go to [www.entertainment.msn.com/windowsmediaguide/](http://www.entertainment.msn.com/windowsmediaguide/) to display available movie clips at MSN Entertainment.

**NOTE:**

Select several movie clips so you can view movies that open directly in the browser as well as clips that will open in Windows Media Player.

- Under the Movies heading at the bottom of the screen, click the **Trailers** link. Click the free movie clips. Some movie clips will load directly in the browser, whereas others will prompt you to specify the application in which to load the clip. If you click a movie clip that does not load directly in the browser, the dialog box shown in Figure 5-10 will appear.

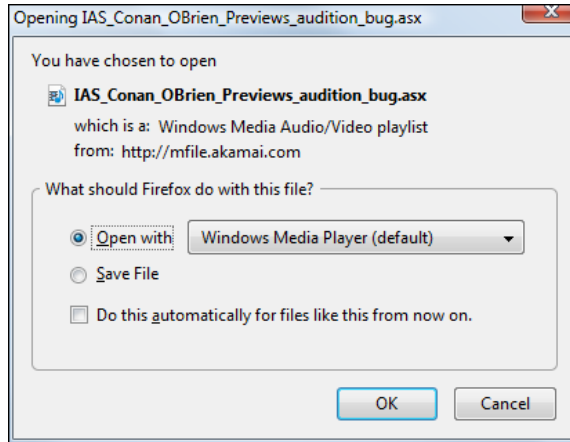


Figure 5-10: Specifying where to open movie clip

- Ensure that the Open With drop-down list specifies the default **Windows Media Player** option, then click **OK**.
- Windows Media Player opens in a new window, separate from Chrome, and plays the clip you selected. The window will resemble Figure 5-11, depending on the video you chose.



Figure 5-11: Windows Media Player window

*Note: If you are unable to find a movie at the MSN Entertainment site that will not load directly in the browser, open the Windows Media Player by clicking the **Start** button and selecting **All Programs | Windows Media Player**. Click the **Videos** link in the navigation bar on the left side of the window, then double-click a sample video to play it in Windows Media Player.*

5. When you are finished viewing the movie clip, close the **Windows Media Player** window and the **Chrome** window. If the Downloads window opened along with the Windows Media Player window, close it as well.

How does viewing movie clips in Windows Media Player compare with viewing clips in QuickTime and in Flash?

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## Firefox Add-Ons

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**OBJECTIVE**

1.5.10: Plug-ins, add-ons and viewers

Firefox add-ons are extensions and plug-ins you can use to add new features to or modify the behavior of existing features for the Firefox Web browser to extend its functionality.

Thousands of add-ons exist at the Mozilla Add-Ons for Firefox page (<https://addons.mozilla.org>). Examples include:

- **Live IP Address** — shows your actual IP address. Useful when troubleshooting connectivity to the Internet.
- **Flashblock** — allows you to manage how Flash applications run in your browser.
- **User Agent Switcher** — can make Firefox appear to Web servers as if it were another browser, such as Internet Explorer or Opera.
- **WOT** - Web of Trust — allows you to determine whether a Web site you are visiting is safe.
- **Firebug** — Turns your Web browser into a development environment so that you can edit HTML, use Cascading Style Sheets and insert code such as JavaScript.
- **Zotero** —Organizes the data that you download so you can research and evaluate it more effectively.

In the following lab, you will download several Firefox add-ons. Suppose you are using Firefox as your default browser and you want to customize it to more closely suit your browsing habits. Firefox add-ons extend the browser's functionality and allow you to personalize your browsing experience.



### Lab 5-5: Using Firefox add-ons

In this lab, you will download several Firefox add-ons.

1. Open **Firefox** and go to **<https://addons.mozilla.org>** to display the Firefox Add-ons page, shown in Figure 5-12. You can select a category on the left side of the page to view the add-ons that correspond to the category you select, or you can use the Search For Add-Ons text box to specify a particular add-on.

*Note: Firefox add-ons can also be accessed using the Firefox Add-ons manager. Select **Firefox | Add-ons**. The interface is different, but the functionality is the same.*

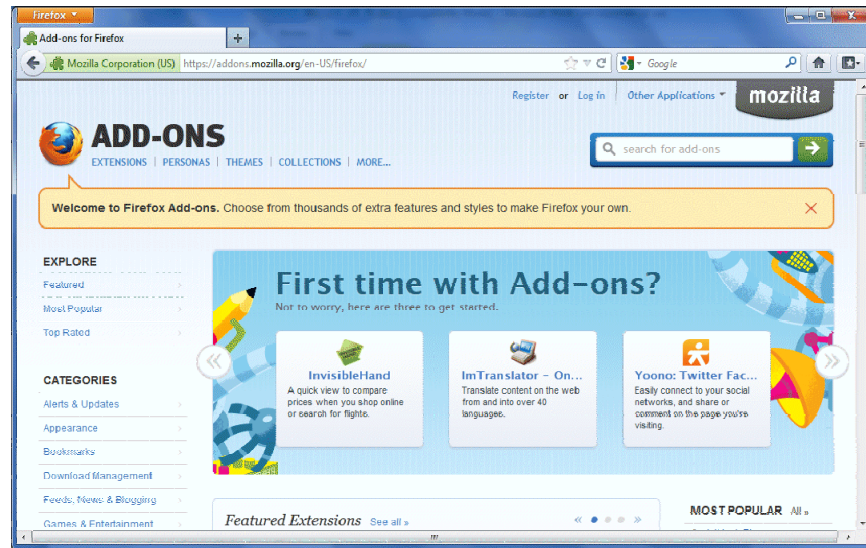


Figure 5-12: Add-ons Web page — Firefox

2. Click in the **Search For Add-Ons** text box, type **Live IP Address**, then press **ENTER**. The Live IP Address add-on will appear at the top of the list of add-ons.
3. Click the **Add To Firefox** button. In the Software Installation dialog box that appears, click **Install Now**. If a security warning appears, select **Install Now**.
4. When the add-on is finished downloading, you will be prompted to restart Firefox to complete the installation process. Click **Restart Now**.
5. To see the Live IP Address add-on, you must enable the Add-On bar. Click **Firefox | Options | Add-on Bar**. Your IP address will appear in the bottom-right portion of your browser window.
6. In the Search For Add-Ons text box, select the text **Live IP Address**, type **Flashblock**, then press **ENTER**. The Flashblock add-on will appear at the top of the list of add-ons.
7. Click the **Add To Firefox** button. In the Software Installation dialog box that appears, click **Install Now**, then restart Firefox when prompted to do so.
8. When the Firefox window reopens, go to a Flash-intensive Web site such as [www.adobe.com/customershowcase.html](http://www.adobe.com/customershowcase.html). Play one of the customer showcase videos.
9. Notice the Flash symbol that appears on the page, shown in Figure 5-13. Flashblock replaces Flash content with placeholders that you can click to download and view the Flash content.

**NOTE:**

Pay attention to the right side of your status bar to observe your IP address.

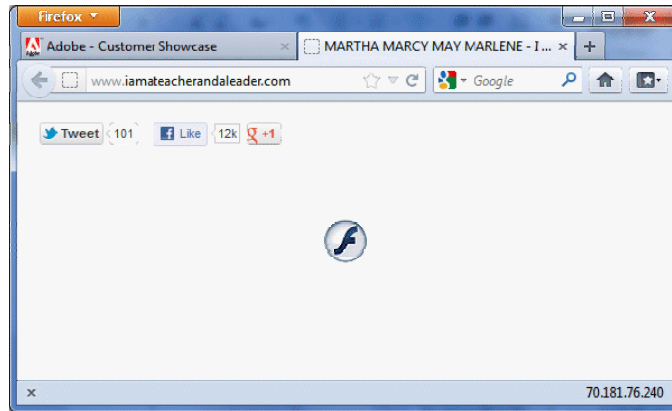


Figure 5-13: Web page with blocked Flash content

10. Click a **Flash symbol placeholder** to download and view the Flash content.
11. You can disable an add-on after you have installed it. Select **Firefox | Add-Ons** to display the Add-ons Manager. Click the **Extensions** link. The two add-ons you just installed appear (Figure 5-14).

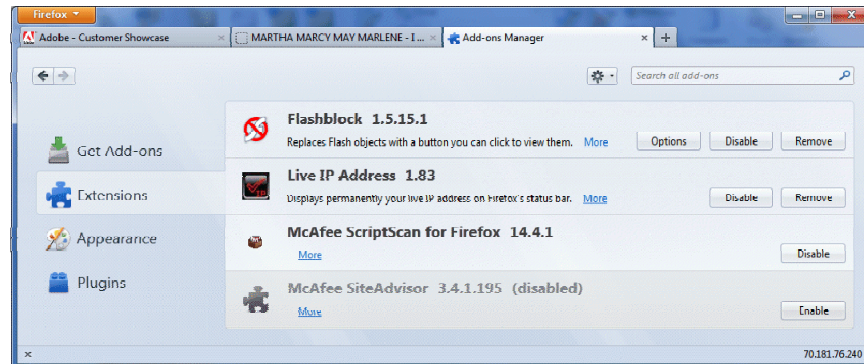


Figure 5-14: Add-on extensions — Firefox

**NOTE:**

You also have the option to uninstall an add-on by clicking the Remove button.

12. Select **Flashblock**, click the **Disable** button, then restart **Firefox**.
13. When the Firefox window opens, select the tab containing the customer showcase site. Notice that the Flash content automatically plays. If you want, you could redisplay the Add-ons Manager and click the **Enable** button to re-enable Flashblock.
14. **If time permits:** Install additional Firefox add-ons to customize your browser to your preferences.
15. Close **Firefox**.

Now that you see how easy it is to download and install Firefox add-ons, what do you think of them? Can you see how the add-ons can enhance your browsing experience?



### CIW Online Resources – Movie Clips

Visit CIW Online at <http://education.Certification-Partners.com/CIW> to watch a movie clip about this topic.

*Lesson 5: There's an Add-On for that*

**OBJECTIVE**

1.5.10: Plug-ins, add-ons and viewers

**viewer**

A scaled-down version of an application; designed to view and print files.

## Types of Viewers

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A **viewer** is necessary to retrieve certain files when the program needed to open a file type is not installed on your computer. Viewers are scaled-down versions of applications and are usually available free of charge. They do not have the full application's functionality. Often, the viewer will allow you to view and print documents, but not edit them. Because viewer files are much smaller than program files, they are helpful when disk space is limited, or when the full program is unavailable. In this section, you will learn about two important viewers.

### Microsoft PowerPoint Viewer

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The Microsoft PowerPoint Viewer is a helpful tool for businesspeople who give slide presentations from laptop computers, or for users who have earlier versions of PowerPoint on their computers and must present slide shows created in newer versions. Installing the most recent version of PowerPoint Viewer ensures the ability to present a slide show created with any version of PowerPoint. PowerPoint Viewer can be downloaded and distributed freely from the Microsoft Web site ([www.microsoft.com/downloads](http://www.microsoft.com/downloads)).

You can also view PowerPoint slides directly within your browser. These file types are typically associated with your browser upon installation of either the browser or a new program.

### Adobe Reader

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Adobe Systems Incorporated offers a free viewer that can read files created in Adobe Acrobat. Because many files on the Web have been created in Adobe Acrobat, this viewer can be found on thousands of corporate Web pages.

### Portable Document Format (PDF)

Adobe created the **Portable Document Format (PDF)**, a general file format that can be created and read on any computer, regardless of the local operating system. These files are suitable for transmission over the Web. Because of their high compression and platform independence, PDF files take minimal time to download, even with slower connections. They also retain formatting information through all platforms.

In the following lab, you will use Adobe Reader with Mozilla Firefox. Suppose the manager for a new Research and Development (R&D) project wants all the department personnel to be able to download and read PDF files. You can install Adobe Reader on the R&D team members' computers to enable each of them to do this.



#### Lab 5-6: Installing and using Adobe Reader with Mozilla Firefox

In this lab, you will download and install the current version of the free Adobe Reader, then use it to view PDF files in Firefox.

*Note: Students may require an account with administrative permissions to install this software.*

1. First, you will download and install Adobe Reader. Open **Firefox** and go to [www.adobe.com](http://www.adobe.com) to display the Adobe home page.

**Portable Document Format (PDF)**

A file format that can be transferred across platforms and retain its formatting; designated by the file name extension .pdf.

**NOTE:**

Vendor sites change frequently. The steps presented in this lab may need modification depending on the current design of the vendor site. Be sure that you locate and download the correct product.

2. Scroll down and click **Adobe Reader** in the Download section.
3. Deselect the **Yes, install the free McAfee Security Scan Plus...** check box if it appears. Click the **Install Now** button to begin the download process. Take the necessary steps to download the plug-in to your Downloads folder.
4. In the Downloads window, double-click **install\_reader10\_en\_aih.exe**. The file name will vary depending on the version you download. Click **Run** to begin the installation process. If the User Account Control dialog box appears, click **Yes** to proceed with the installation.
5. When the Adobe Reader Installer is complete, click **Finish**. Close the **Downloads** window.
6. Next, you will read a PDF file in Firefox using Adobe Reader. Go to **www.CIWcertified.com** to visit the CIW Web site.
7. Click the **Certifications** link. In the left navigation pane, click the **Web Foundations Series** link, then click the **Web Foundations Associate** link to display the CIW Web Foundations Associate page.
8. On the right side of the page (in the Quick Reference area), click the **Exam Objectives** link. Because this is the first time you are opening Adobe Reader, the License Agreement window appears. Click the **Accept** button to accept the terms of the agreement. The PDF file will now open in your browser window, as shown in Figure 5-15.

**NOTE:**

Once you accept the license agreement the first time, you will not be prompted to do so again in any subsequent launching of Adobe Reader.

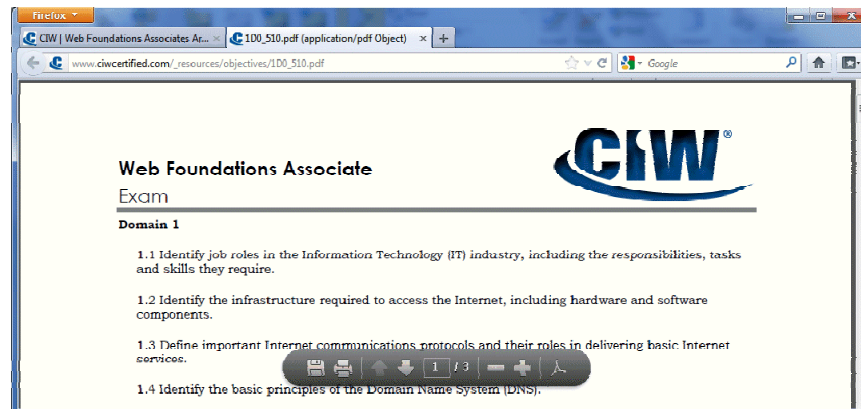


Figure 5-15: PDF file in Adobe Reader — Firefox

9. Use the Adobe Reader toolbar buttons to navigate through the document. Try to edit the document. Can you?
10. Close **Firefox** (close all tabs).



**OBJECTIVE**

1.5.11: Document and multimedia file formats

## Miscellaneous File Formats

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Files that you might download or use with plug-ins and streaming technologies include the following:

- Video
- Audio
- Graphics
- Documents

### Video files

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Some of the most commonly used video files on the Web today include (but are not limited to) files with the following file name extensions:

- **.avi** — **Audio Video Interleave (AVI)** files are standard video files for Windows. They are supported by Windows Media Player in Internet Explorer and by LiveVideo in Firefox. LiveVideo allows users to instantly view AVI movies embedded in Web pages, without downloading the files for later playback.
- **.mov** — the standard format for QuickTime movies, and the Apple OS X native movie platform. Another file name extension for QuickTime movies is **.qt**.
- **.mp4** — MPEG-4 is a standard format for video on the Internet. The **Moving Picture Experts Group (MPEG)** is a standard for digital audio and video compression that provides extremely high quality and resolution. MP4 is supported by HTML5 video.
- **.ogg** — video format designed for HTML5 video. It is royalty-free and can be distributed without licensing fees.
- **.webm** — a royalty-free, open video and audio format designed for HTML5 video. The WebM format and its development is sponsored by Google.

**Audio Video Interleave (AVI)**  
Standard Windows file format for video files.

**Moving Picture Experts Group (MPEG)**  
High-quality audio and video file compression format.

### Audio files

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Firefox and Internet Explorer include native, or built-in, support for standard audio formats such as **Audio Interchange File Format (AIFF)**, **AU**, MIDI (discussed earlier in this lesson) and **Waveform (WAV)**. Users can play sound files embedded in HTML documents using their browsers, which automatically identify and play most major formats embedded in or linked to a Web page. Through connections to applications such as RealPlayer and Windows Media Player, browsers can also play MP3 files and other formats.

The sound files you are likely to encounter on the Web include:

- **.au** — audio format used by UNIX servers. Most browsers provide built-in support for AU files.
- **.aiff** — Audio Interchange File Format (AIFF), developed by Apple Computer, offers high-quality audio. Most browsers provide built-in support for AIFF files. The same programs that play AU files can be used to play AIFF files.

**Audio Interchange File Format (AIFF)**  
High-quality audio format developed by Apple Computer.

**AU**  
Audio file format used by UNIX servers, the majority of Web servers. Most Web browsers can read AU.

**Waveform (WAV)**  
Windows standard format for audio files.

**MPEG-1 Audio Layer-3 (MP3)**

Popular compression standard for audio files; retains most of the sound quality of the source.

**Ogg Vorbis (.ogg)**

A free, open-source alternative to the MP3 compression format for audio files; creates smaller, faster downloading files.

**NOTE:**

MP3 files have created intellectual-property concerns that have changed the way companies do business. MP3 music files have made it relatively simple for users to download music onto their computers without paying for it. The creators of the music do not receive payment for the work they produced. This action is called music piracy.

- **.mp3** — (abbreviation for **MPEG-1 Audio Layer-3**), a format for compressing audio files that uses the MPEG-1 standard and is supported by HTML5 audio. The MP3 format compresses audio files to one-twelfth the original size, shortening download times considerably. The original sound quality is preserved throughout the compression and decompression process. MP3 files are non-streaming (you must download them before you can play them). To listen to an MP3 file, you must download an MP3 player. Windows operating systems have built-in MP3 players. Many MP3 players are available as shareware and freeware on the Web. Any time a developer creates an application that uses the MP3 format, he or she must pay a license fee to use this format.
- **.ogg** — **Ogg Vorbis**, a free, open-source alternative to the MP3 format. In addition to not requiring a license, the Ogg Vorbis format uses a somewhat more efficient compression algorithm. Ogg Vorbis is discussed in more detail in the following section. It is supported by HTML5 audio.
- **.wav** — **Waveform (WAV)**, the native sound format for Windows. Most browsers provide built-in support for WAV files. It is supported by HTML5 audio.

Following is a brief list of software applications that can play audio files:

- **Nullsoft Winamp** ([www.winamp.com](http://www.winamp.com)) — plays a variety of formats
- **Windows Media Player** (<http://windows.microsoft.com/en-US/windows/products/windows-media>) — also supports many formats
- **XMMS** ([www.xmms.org](http://www.xmms.org)) — for UNIX-based systems (e.g., Ubuntu Linux)
- **Vorbis** (<http://winvorbis.stationplaylist.com>) — for the Ogg Vorbis format on UNIX systems

**Ogg**

Ogg is a free, open-source alternative to the MP3 audio format (which is proprietary and licensed) and the MP4 video format. It uses the .ogg file name extension and is maintained by the Xiph.Org Foundation. The audio format is specifically called Ogg Vorbis.

The Ogg format uses a somewhat more efficient compression algorithm than MPEG. Also, the creators of this format determined that certain frequencies can be dropped (lost) without affecting audio or video quality. Therefore, files are smaller, download faster, and sound as good as other formats.

Windows Media Player and most Windows multimedia players do not natively support Ogg. However, you can load DirectShow filters to decode Ogg in them. DirectShow filters can be found at the Xiph.org site ([www.xiph.org/dshow/](http://www.xiph.org/dshow/)).

On Windows systems, the following players support Ogg files after DirectShow is installed:

- Windows Media Player
- Media Player Classic
- Core Media Player
- RealPlayer

Several Windows players do not require DirectShow. These players support Ogg by default:

- Winamp 5 and higher
- VLC media player

On UNIX/Linux, use the following players for Ogg files:

- XMMS
- VLC media player

For more information about the Ogg format, consult the Xiph.org site ([www.xiph.org](http://www.xiph.org)) and the Ogg Vorbis site ([www.vorbis.com](http://www.vorbis.com)).

In the following lab, you will enable Windows Media Player to view Ogg Vorbis files. Suppose you have accessed a site that contains songs you want to hear, but they are all in the Ogg Vorbis format. You want to use the Windows Media Player that comes with Windows Vista. How can you view the files?



### Lab 5-7: Viewing Ogg Vorbis files in Windows Media Player

**NOTE:**

Make sure that you have turned on your system's speakers or headphones.

In this lab, you will install the DirectShow filter required for Windows Media Player to play Ogg Vorbis files, then use the player to play a sample file.

1. First, you will install the DirectShow filter.

*Note: To save time, the DirectShow filter is provided with the supplemental files in the **C:\CIW\Internet\Lab Files\Lesson05** folder.*

2. Before you install the DirectShow filter, you must remove any existing Ogg Vorbis codecs. Go to **Start | Control Panel | Programs | Programs And Features**. The Uninstall Or Change A Program window appears. Remove any **Ogg codecs**, if necessary. Close the **Control Panel**.
3. Ensure that the **Windows Media Player** is closed.
4. Open **Windows Explorer** and go to the **C:\CIW\Internet\Lab Files\Lesson05** folder. Double-click **opencodecs\_0.85.17777.exe**.
5. In the User Account Control dialog box that appears, click **Yes**. The Open Codecs Setup Wizard will appear. Take the steps necessary to complete the steps in the Wizard to install the codecs. Accept all defaults.
6. Click **Finish** when the installation is complete. Close the **Notepad** window that appears at the end of the installation process.
7. For the remainder of this lab to function properly, Windows Media Player must be your default audio player for Ogg files. Go to **Start | Control Panel | Programs | Default Programs**, then click the **Associate a file type or protocol with a program** link. Scroll down and select the **.ogg** file name extension. Click **Change Program**, click **Windows Media Player**, then click **OK**. Repeat for the **.oga** file name extension, if necessary. When finished, click **Close**.

8. Next, you will view Ogg Vorbis files in Windows Media Player. Open **Firefox** and go to [www.vorbis.com/music/](http://www.vorbis.com/music/) to visit the Vorbis.com site's music page, shown in Figure 5-16. Notice that five sample tracks are available.



Figure 5-16: Vorbis.com's music page

9. Click a link for any of the Ogg Vorbis tracks. One of two responses will occur:
- Windows Media Player will open and play the track, as shown in Figure 5-18. Skip to Step 11.
  - If it does not play, an Opening dialog box may appear. You must ensure that **Windows Media Player** is selected in the Open With drop-down list, then click **OK**. An alert message may appear stating that Windows Media Player does not recognize the file name extension of .ogx (the x is a variable). It will ask if you are sure the file is from a trustworthy source, and if you want to play it in Windows Media Player. If this message appears, select the check box for **Don't ask me again for this extension (.ogx)**, as shown in Figure 5-17.

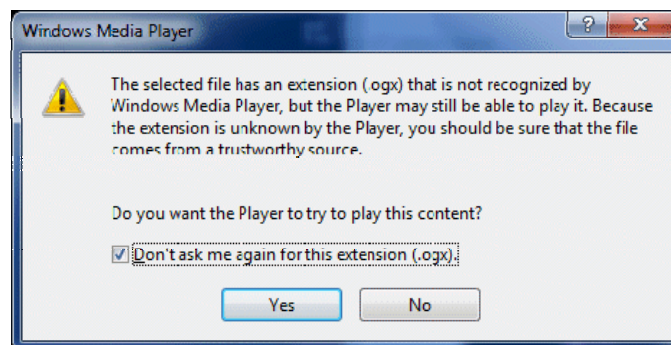


Figure 5-17: Configuring Windows Media Player to play .ogg files

10. Click **Yes**. Windows Media Player will open and play the track, as shown in Figure 5-18.

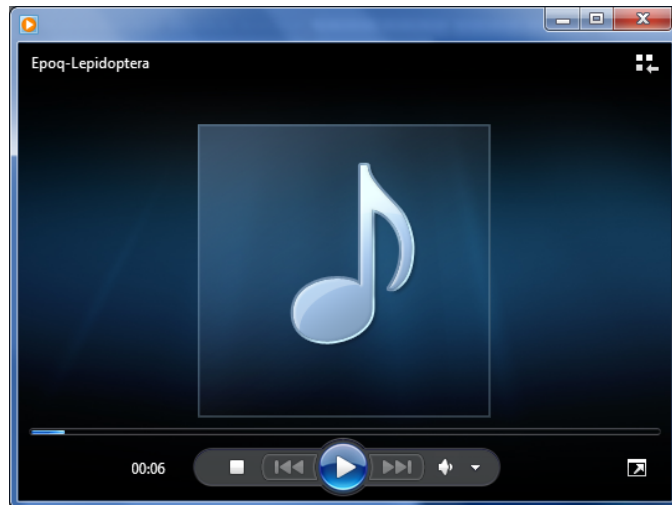


Figure 5-18: Playing an Ogg Vorbis track in Windows Media Player

11. Close the **Windows Media Player** window and the **Firefox** window.

## Converting media file formats

For many types of video and audio files, proprietary formats are not cross-compatible. For instance, you cannot play a RealMedia file with Windows Media Player. Several shareware programs can convert various types of files.

Video type conversion programs include the Free Video Converter Factory ([www.videoconverterfactory.com/free-video-converter](http://www.videoconverterfactory.com/free-video-converter)), HAMSTER soft (<http://videoconverter.hamstersoft.com>) and Freemake Video Converter ([www.freemake.com/free\\_video\\_converter](http://www.freemake.com/free_video_converter)).

Audio type conversions are numerous. A few examples are MP3 to WAV, WAV to various compressed formats, or even one compressed format to another, such as MP3 to Ogg. For example, oggdec (an Ogg Vorbis tool) decodes an Ogg Vorbis file to a WAV file.



Converting file formats that use lossy compression does not yield the best sound quality.

Visit [www.tucows.com](http://www.tucows.com) or <http://freecode.com> to explore other tools you can use to convert media files.

## Graphics files

Standard formats for graphics files use the following file name extensions. All of these formats can be viewed in browsers, and you can use several graphics programs (such as Photoshop or Paint Shop Pro) to modify and convert these files to other formats.

- **.png — Portable Network Graphics (PNG)** has become an Internet standard for graphics. It is a free open-source file format that can support 32-bit color palettes (nearly all colors) for graphics and photographs. PNG uses a bitmap format and was developed to replace the patented and limited GIF format.

**Portable Network Graphics (PNG)**  
An open source graphical image file format created to replace GIFs.

### Graphics Interchange Format (GIF)

A graphical image file format commonly used in HTML documents.

### Joint Photographic Experts Group (JPEG)

A graphical image file format commonly used for photographs.

### WebP

An open-source image file format that provides lossless and lossy compression for images on the Web.

### Tagged Image File Format (TIFF)

Commonly used graphic file format, developed by Aldus Corporation; uses the .tif or .tiff file name extension.

### Encapsulated PostScript (EPS)

File format used for importing and exporting graphics.

- **.gif — Graphics Interchange Format (GIF)**, previously one of the most common graphics file formats on the Internet. It has a patent, so anyone creating software programs that produce GIF files must pay a royalty. GIF is a bitmap format that uses lossless compression. It supports various resolutions, but is limited to 256 colors and is used most effectively for drawings and illustrations, rather than for photographs.
- **.jpg or .jpeg or .jif — Joint Photographic Experts Group (JPEG)**, a format widely used for photographs and complex graphics. This format supports 16 million colors and uses lossy compression. JPEG files can be relatively small. However, the developer must decide how much compression to use. The more compression, the smaller the file size, but the lower the image quality. The JPEG format does not work well with line drawings because not much data can be discarded during the lossy compression process, and the images lose sharpness and clarity.
- **.webp** — a newer image format (introduced by Google in 2010) that uses the same technology as the WebM video/audio format. WebP supports transparency with both lossless and lossy compression. Thus, WebP combines the transparency support that PNG files offer with the smaller file sizes afforded by JPEG files. Smaller file sizes mean that browsers can load Web pages faster and that less data must be transferred over the network, thereby reducing bandwidth usage. WebP is supported natively in the Chrome and Opera browsers. As of this writing, it is not supported in Internet Explorer, Safari or Firefox.
- **.tif or tiff** — developed by the Aldus Corporation, which is now Adobe Software. **Tagged Image File Format (TIFF)** is a popular, customizable graphic format commonly used for medical imaging and desktop publishing. TIFF supports grayscale, 8-bit and 24-bit color, and monochrome formats. TIFF files are high-resolution and very large in file size.
- **.ps** — PostScript (PS) files are written in a page description language so they are unreadable, and are designed for printing on PostScript printers.
- **.eps — Encapsulated PostScript (EPS)** is a file format that you can use to import and export graphic files between operating systems and applications. EPS is standard in the publishing industry. Whereas a PostScript file only has the instructions that determine the display of the graphic, an EPS file actually contains the bitmap information for the graphics file. This additional data allows EPS files to display an alternative bitmap graphic for previewing.

## EPS formats

EPS provides three preview formats for graphics:

- PICT for Apple OS X systems
- TIFF for Windows-compatible computers
- EPSI, which is platform-independent

Most of the time, the EPSI format is used to transfer a graphic from a graphics-editing application (such as Adobe Photoshop) into a page-layout application (such as Adobe PageMaker). EPSI is necessary because each application tends to use its own format. EPSI acts as an intermediary that ensures no information will be lost during conversion from one format to another.

## Document files

Some of the common document file formats you may download from the Internet (or your company's intranet) use the following file name extensions:

- **.txt** — a plain (ASCII) text file. These files can be viewed in your browser, or with a Word processor or text editor.
- **.pdf** — As you learned earlier in this lesson, PDF files can be read on any computer, regardless of the operating system. You need Adobe Reader to view PDF files, and a full version of Adobe Acrobat to create or modify PDF files.
- **.docx or .doc** — These files are usually created with Microsoft Word for Windows.
- **.odt** — These files are usually created with Open Office Writer.
- **.rtf** — **Rich Text Format (RTF)** was developed by Microsoft. Using RTF, you can insert images and format text. RTF is compatible with many operating systems and applications, including most OS X and Windows word processors.

#### Rich Text Format (RTF)

Portable text file format created by Microsoft that allows image insertion and text formatting; an almost universal format.

Most applications allow you to save files in multiple formats easily. For example, in Microsoft Word, you can select File | Save As, then select PDF, RTF, DOC, DOCX, ODT, or TXT as the document type.



### CIW Online Resources – Online Exercise

Visit CIW Online at <http://education.Certification-Partners.com/CIW> to complete an interactive exercise that will reinforce what you have learned about this topic.

*Exercise 5-2: File formats*

#### OBJECTIVE

1.5.7: Files and Web browsers

## Downloading Files with a Browser

You can use various methods to download files from the Web using your browser. You can download Web pages (HTML files), image files, compressed files (ZIP files), various document types, MIDI files and so forth. However, remember that although you can download many things, that ability does not always make it acceptable to do so.

### Copyright infringement

Keep in mind that copyright laws protect original works of authorship online as well as in print. Works of authorship include literary works (including computer programs); musical works; pictorial, graphical and sculptural works; motion pictures and other audiovisual works; sound recordings; and architectural works. Downloading songs and movies from the Internet without permission or payment is an illegal use of copyrighted material.

#### NOTE:

A copyright symbol looks like this: ©

Many photos and other images found on Web sites include copyright information or a request that you do not copy the work. If you want to use someone's copyright-protected material, you must contact the copyright owner and ask for permission. If you are granted permission to use the copyrighted work, the copyright holder determines the terms of use. For instance, there may be no cost, but you may be required to credit the owner for the work. If you use someone else's copyrighted material without obtaining permission, you are committing copyright infringement, which is a punishable crime.

### Saving Web site content

You can save entire Web pages or elements of a Web page to your hard disk. You can choose different Save options depending on the elements you want to save. For example, you would use different commands to save an entire Web page than you would to save a graphic from a Web page.

When saving a Web page to hard disk, most browsers save all related images, fonts and scripts referenced by the HTML on the page. You can open the page in your browser even when you are not connected to the Internet.

When you download files to your hard disk, you are able to specify a destination directory. Be sure to remember where you store your downloaded files so that you can easily locate them when you are offline. In the next lab, you will save downloaded files to your class Downloads folder.



You can also copy and paste text and images from a Web page into various types of documents, such as word-processing files or graphics files. Select the text and images you want to copy, then copy them to the Clipboard. Open the application into which you want to paste the text and/or images, then paste them into a new document.

In the following lab, you will download and store Web site content using Mozilla Firefox. Suppose the marketing director of your company wants to study a page from a competitor's Web site on his laptop over the weekend without having to access the Internet to do so. You can download and save the Web page to the laptop's hard drive, giving the manager access to all the images, fonts and scripts.



### Lab 5-8: Downloading and storing Web site content using Mozilla Firefox

In this lab, you will use Firefox to save Web site content using various methods.

1. First, you will save an entire Web page. Open **Firefox** and go to **[www.CIWcertified.com](http://www.CIWcertified.com)** to visit the CIW Web site.
2. Select **Firefox | Save Page As** to display the Save As dialog box, shown in Figure 5-19. Notice that the default location in which to save files is your Downloads folder. Also notice that the file type is an .htm file.

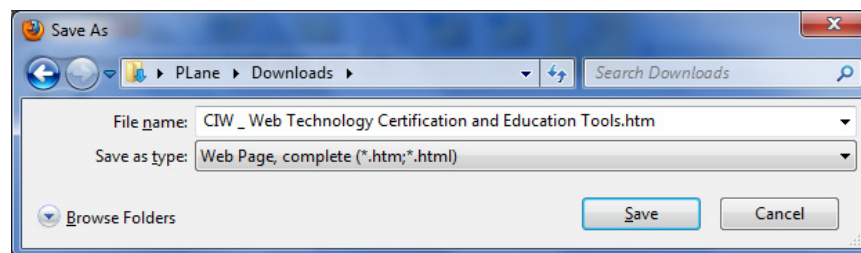


Figure 5-19: Save As dialog box

3. Click the **Save** button to save the Web page as a file on your hard drive. Close the **Downloads** window.
4. Next, you will save an image from the Web site to your hard drive. Go to any page, right-click any graphic on the page, then click **Save Image As** to display the Save Image dialog box, shown in Figure 5-20. Notice that the file type is an image (.gif, .jpg, etc.) file.



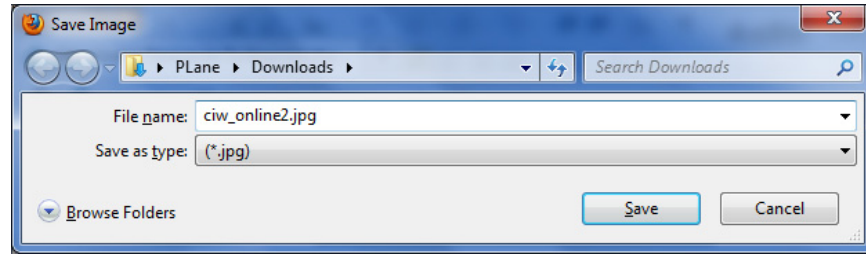


Figure 5-20: Save Image dialog box

5. Click the **Save** button to save the image file to your hard drive. Close the **Downloads** window.
6. Next, you will view and then download a PDF file. Click the **Certifications** link, then the **Web Foundations Series** link, and then the **Internet Business Associate** link. The CIW Internet Business Associate page will appear.
7. On the right side of the page (in the Quick Reference area), click the **Exam Objectives** link to display the PDF file in your browser window.
8. Select **Firefox | Save Page As** to display the Save As dialog box. Notice that the file type is a .pdf file. Click the **Save** button to save the PDF page as a file on your hard drive. Close the **Downloads** window.
9. Close the **PDF** tab in the Firefox window.
10. Next, you will download a PDF file without viewing it first. In the Quick Reference area, right-click the **Course Description** link, then click **Save Link As** to display the Enter Name Of File To Save To dialog box. Notice that the file type is a .pdf file. Click the **Save** button to save the PDF page as a file on your hard drive.
11. Finally, you will examine downloaded files. Close the **Downloads** window, then close **Firefox**.
12. Open **Windows Explorer**, then navigate to the <username>/**Downloads** folder. Notice that the files you downloaded over the course of this and the preceding lessons are located here.
13. Double-click any of the PDF files to open the file in an Adobe Reader window. Close the **Adobe Reader** window.
14. Close all windows and redisplay the Desktop.



## CIW Online Resources – Course Mastery

Visit CIW Online at <http://education.Certification-Partners.com/CIW> to take the Course Mastery review of this lesson or lesson segment.

*IBA Lesson 5 - Part B*

## Case Study

### The Right Tools for the Job

Tomas is responsible for setting up and maintaining employee workstations at his company.

Next week, Amanda will begin working in the marketing department for the company. In addition to the standard company setup, Amanda needs the equipment necessary to view and hear various sound and animation files so that she can evaluate their quality. Also, she will routinely review PDF files that are posted to the company extranet.

As Tomas sets up Amanda's workstation, he installs the following components and plug-ins:

- A sound card and speakers so she can hear sound files
- Adobe Flash Player to allow her to view animation
- Adobe Reader to allow her to view PDF files

\* \* \*

As a class, discuss this scenario and answer the following questions:

- What, if any, additional components or plug-ins can Tomas install to help Amanda perform her job functions?
- What security risks should Tomas discuss with Amanda regarding the content she may be viewing?

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## Lesson Summary



### Application project

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What similarities and differences do you notice between the Google Chrome, Mozilla Firefox and Windows Internet Explorer browsers when using plug-ins such as QuickTime? Do you prefer one browser to the other? Could plug-ins help your company's Web-based clients? What other types of multimedia files might you use that require plug-ins? How will HTML5 affect plug-in use in the future?

Another popular plug-in is the MP3 player. Locate, download and install an MP3 player, then download license-free MP3 content and play it. Is the MP3 player you installed similar to other plug-ins you used in this lesson? Would you consider it a plug-in or a stand-alone application?



### Skills review

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In this lesson, you learned about active content, and the programming and scripting languages used to create it, such as C, C++, C#, Java, JavaScript, ActiveX, JScript and VBScript. You learned about the goal of HTML5 to eventually replace browser plug-ins. You were introduced to several widely used Web browser plug-ins, and you saw how they can enhance browser performance and interactivity. You also gained hands-on experience downloading and installing plug-ins, and you navigated to several sites on the Web that contained functional plug-in demonstrations. Finally, you downloaded and stored files to your hard drive using your browser.

Now that you have completed this lesson, you should be able to:

- ✓ 1.5.7: Download and store files using a Web browser.
- ✓ 1.5.10: Install and upgrade common plug-ins, add-ons and viewers (e.g., Adobe Reader, Adobe Flash Player, Microsoft Silverlight, Windows Media Player, Apple QuickTime) and identify their common file name extensions.
- ✓ 1.5.11: Use document and multimedia file formats, including PDF, PNG, RTF, PostScript (PS), AVI, MPEG, MP3, MP4, Ogg. Convert between file formats when appropriate.



### CIW Practice Exams

Visit CIW Online at <http://education.Certification-Partners.com/CIW> to take the Practice Exams assessment covering the objectives in this lesson.

*IBA Objective 1.05 Review*

*Note that some objectives may be only partially covered in this lesson.*

## Lesson 5 Review

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1. What was the first scripting language developed exclusively for online content design?

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2. Briefly describe Java.

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3. Name some of the functions of Java applets.

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4. What are the four ways in which a plug-in can appear within a browser?

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5. What must you do in order to run Ogg files in Windows Media Player?

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