

unlocking the **beauty** of the web

Internet Explorer 9 Beta Product Guide

# Internet Explorer 9 Beta Product Guide

## Abstract

With Windows® Internet Explorer® 9, your websites look and perform as if they were native to Microsoft® Windows. Today's websites and browsers only use 10 percent of what your PC offers, but with Internet Explorer 9 you can tap into the power of your whole PC so your websites shine. Taking full advantage of your PC's hardware through Windows, you can enjoy graphically rich and immersive experiences that are as fast and responsive as native applications installed on your PC. With a new, streamlined user experience, you can focus on the websites you love with a clean look that integrates seamlessly with Windows 7. A robust set of built-in security, privacy and reliability technologies keep you safer and your browsing experience uninterrupted. And for web developers, support for HTML5 and modern web standards architected to take advantage of the graphics processing unit (GPU) means that the same markup not only works across the web, but runs faster and delivers a richer experience through Windows and Internet Explorer 9. This guide outlines new features in Internet Explorer 9, highlighting the top features, and provides additional information on features specific for end users, developers, and IT professionals. Read on to learn more about how Internet Explorer 9 unlocks the *Beauty of the Web* ([www.beautyoftheweb.com](http://www.beautyoftheweb.com)).

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The background is a solid blue color with a subtle gradient. On the right side, there is a vertical, glowing light streak that tapers towards the top, resembling a beam of light or a stylized flame. The streak has a bright white core that fades into a soft blue glow.

# Introduction





# Introduction

## Why we build a browser

There are over a billion Windows® customers in the world today. Most of them spend more time browsing the web than any other activity on their computer. We build Windows Internet Explorer® for these customers. Our focus is on making sure that the number one activity that customers do is as compelling an experience as the native applications installed on their computers. In designing Internet Explorer 9, we have optimized the browsing experience for the Windows customer. This focus has informed everything that we have done in planning, developing, and releasing the latest beta version of Internet Explorer.

Over the last few years, there have been more changes in the browser space and the Internet than ever. For customers, the web has moved from being a utilitarian tool to a personalized experience. The increase in social-networking usage, the proliferation of video on the web and the increasing number of rich web and mobile applications connecting and engaging users online have made people come to expect more from their online experience. The rich graphics and interactive capabilities once exclusively associated with PC or mobile applications are increasingly expected from your favorite web-based email service, photo site, social network, or content site.

This kind of immersive experience does not occur on the web today. People experience one thing from the applications that are installed on their computer and something different from the web. Using a browser is often associated with limited performance and interactivity. The content that you care about is typically presented in a simple and flat format. Simply put, the web today is not as nearly as fast, rich, or intuitive as it could be, and yet surfing the web is what people do most on their PCs. But, the web is about to take a significant step forward.

To start, you need a browser that is built around HTML5 and other modern web standards. For HTML5 to reach its full promise you also need a browser

architected to take advantage of the full computing power of your PC through Windows. And finally, you need to take the web out of the browser box. Your favorite sites should be seamlessly integrated with Windows 7 and look and behave just like a native application experience. All these elements combined promise to unlock what's next on the web.

## Introducing Internet Explorer 9

Our vision for Internet Explorer 9 started with four core focus areas.

First, we wanted developers to take advantage of HTML5 and other modern web standards through Internet Explorer 9. Our goal of having the same markup create interoperable websites means developers can move away from writing the same sites two or three times, or creating browser prefixes to target specific browsers. As developers have rallied around the promise of a new class of rich HTML5 web applications, we have worked with standards bodies like the World Wide Web Consortium (W3C) to bring these standards to the marketplace.

**Internet Explorer 9 is the most standards-compliant browser that we have ever shipped.**

Second, to transform the flat web experience of today, the power of modern hardware must be unleashed on the web. Rich applications require robust computing capabilities that span software and hardware. As web applications become increasingly complex and graphically based, and as customers spend more and more time using these applications, the browser needs to be able to take advantage of computing power offered with modern hardware and operating systems. This is how native applications have used Windows for years. **Today, the average browser uses only 10 percent of the computing power that is available in a modern PC. Internet Explorer 9 unlocks the remaining 90 percent.**

Third, no one opens their browser solely for the sake of opening their browser. People go online to get to the websites and applications they care about most: to get news about the sports that they care about, to learn about community events that matter to them, and to connect with the people that enrich their lives. The browser can enhance that online experience, but ideally, the browser melts into the background and allows the sites that people care about to come forward and shine. Today, most of the web is delivered in a browser-centric presentation.

**Internet Explorer 9 is site-centric and meets users where they are today. The result is a clean user experience that puts the web first, and lets your sites shine.**

And finally, our focus on security and privacy needs to continue to be second to none. **Because the web still isn't as secure or private as it should be, Internet Explorer 9 continues our industry leadership in building the world's most trusted browser.**

## Open and transparent approach

With Internet Explorer 9, we established a new model for designing and releasing Internet Explorer to the world. In March 2010 at the MIX10 conference, we launched the Internet Explorer Test Drive site (<http://ie.microsoft.com/testdrive/>), and introduced the Internet Explorer 9 Platform Preview. Since then, we have released an updated version of the Internet Explorer 9 platform approximately every eight weeks to web developers and the browser community. The Platform Preview is only the underlying platform component of the browser; it allows developers to see the standards that we are supporting, to experience new platform capabilities, and more importantly, to come along with us and provide feedback as we build Internet Explorer 9.

This open and transparent way of developing Internet Explorer 9 has created tremendous enthusiasm. Developers, partners, and the browser community are incredibly excited with our early releases, our consistent release schedule, our clarity around what we are building, and our commitment to act on their feedback. Since we shipped the first Platform Preview in March 2010, there have been:

- 2.75 million downloads of the Platform Preview.
- 25 million page visits to the Internet Explorer Test Drive site.
- Two thousand pieces of feedback submitted through Microsoft Connect.

With the release of Internet Explorer 9 Beta, the conversation now moves from the new Internet Explorer 9 platform and what developers can build, to what the new Internet Explorer experience can give users: the best browsing experience on Windows.

## What's new in Internet Explorer 9: Unlocking the beauty of the web

Internet Explorer 9 makes your web feel as native as the applications running on Windows.

### **Interoperable: Internet Explorer 9 has HTML5 at the center, allowing developers to write the same markup.**

With extensive support for HTML5, SVG, CSS3, and DOM, developers have a new set of capabilities with Internet Explorer 9 that will help usher in the next wave of innovation across the web. The promise of these standards is that developers can write their markup once and it will work across browsers. As a result, developers can focus on building great web applications instead of needlessly rewriting their sites. Internet Explorer 9 is committed to enabling the use of the same markup with extensive support for modern standards, active participation with the standards bodies, and comprehensive test cases, built and submitted to standards organizations such as the W3C, to ensure the web is truly interoperable. Support for hardware acceleration through Windows means that the same markup not only works across the web, but runs faster and delivers a richer experience through Windows and Internet Explorer 9.

**Fast: Internet Explorer 9 is all around fast.** Part of reimagining the role of the browser to deliver immersive, compelling web experiences is rethinking the concept of fast. Today, fast is too often narrowly defined as page load time. Tomorrow, a browser will not be able to call itself fast unless it lets people interact with graphically rich sites



and applications with lightning speed. Fully hardware-accelerated graphics, text, video, and audio through Windows means that the same markup not only works across the web, but runs faster and delivers a richer experience. Designed to take full advantage of the power of your computer's hardware through Windows, Internet Explorer 9 delivers rich and immersive experiences that are as fast and responsive as native applications installed on your computer.

**Clean: Internet Explorer 9 puts the focus on the web sites you love, with a clean experience for your web that meets you where you are.** Today, your favorite content, your sites and applications are buried behind a browser. You can't get to anything unless you open the browser first. Once the browser is open, you either have to know the address of the website you're going to, or you have to do a lot of searching and navigation to get where you want to go. With Internet Explorer 9 and Windows, we reimagined the role of the browser and how people interact with websites and web applications. Internet Explorer 9 is site-centric, as opposed to browser-centric. You have the websites you love with a clean look that makes your websites shine.

**Trusted: Internet Explorer 9 helps people feel confident and in control.** The more that the web becomes part of our everyday lives, the more complex that the issues of online trust and security become. When done correctly, creating a trustworthy browser helps customers feel connected to the web, not distracted by concerns about reliability, privacy, or safety. Trust comes in many forms. People want to know that when they are doing something in one browser tab, they won't lose their work that is in another tab. They want to know that the sites that they visit and the files that they download aren't going to cause harm to their computers or their personal data. Finally, they want to know that their private information is kept private, and that they are in control of the decision as to whether to keep their data private while online. Internet Explorer 9 is the trusted way to access the web because it has a robust set of built-in security, privacy, and reliability technologies that can help keep you safer and your browsing experience virtually uninterrupted.

## Top new features

Following are brief descriptions of the top new features in Internet Explorer 9, where websites take center stage. More details on each feature can be found in the audience sections later in this guide.

**Hardware-accelerated HTML5.** Today, when you browse the web, you use about 10 percent of the power of your computer. Internet Explorer 9 unlocks the other 90 percent. Built to provide professional-grade HTML5 support, Internet Explorer 9 takes advantage of your computer's hardware through Windows to unlock the next class of experiences developers will be able to create.

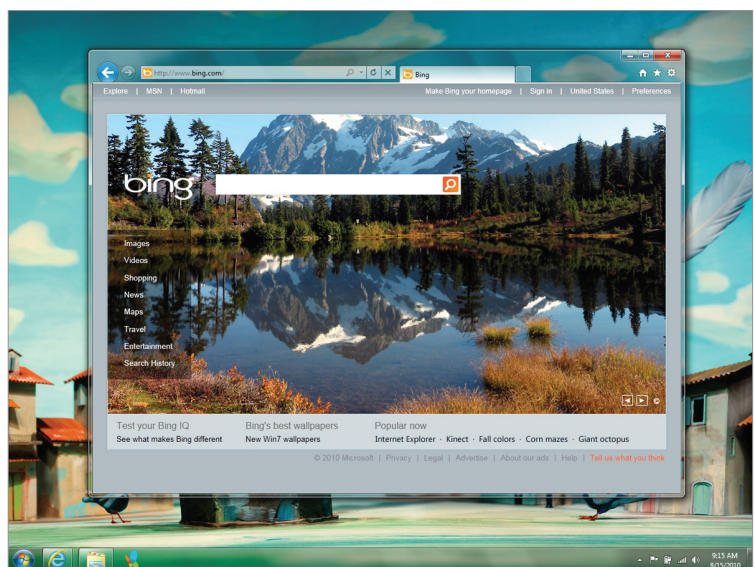
New hardware-accelerated HTML5 features include support for the **video** and **audio** elements, enabling smooth, embedded media content without the need for a plug-in. Additionally, support for the HTML5 **canvas** element enables easy and dynamic graphics rendering, all while taking advantage of hardware acceleration through Windows and the graphics processing unit (GPU). New support for several CSS3 modules dramatically increases the creative possibilities for web designers, while new DOM support means even more flexibility for web developers.

**Support for modern standards.** Developers and customers are clamoring for a new class of rich web applications enabled by web standards like HTML5, CSS3 and ECMAScript5. We have worked closely with standards bodies like the W3C to help develop these standards and to bring them to the marketplace through Internet Explorer 9. Internet Explorer 9 has support for numerous new hardware-accelerated, standards-compliant features based on HTML5, CSS3, DOM L2 and L3, SVG, ECMAScript5, and more.

Simply supporting standards is not enough to enable developers to use the same markup across different browsers. As part of our ongoing commitment to enable developers to use the same markup on the web, we have contributed many new tests to the W3C for HTML5, CSS3, and the DOM to help same markup become a reality. As of the release of IE9 Platform Preview 4 on August 4, 2010, we had contributed 2,138 tests to the standards bodies detailed at the Internet Explorer Testing Center on MSDN (<http://samples.msdn.microsoft.com/ietestcenter/>).

**Seamless Windows 7 integration.** Accessing and using your favorite sites are easier in Internet Explorer 9 with features that are seamlessly integrated with Windows 7. You can access your favorite websites directly from the Windows taskbar without having to first open your browser. With **Pinned Sites**, you can drag your favorite sites into the Windows taskbar to make access easy. Pinned Sites co-mingle easily with your other native Windows 7 applications. When supported by the website, each site that is pinned has taskbar previews and a **Jump List**, so that you can interact with these sites with the ease and familiarity of other Windows applications. Jump Lists are a quick way to get to frequently visited websites without first opening your browser. **Thumbnail preview controls** available on the Windows 7 taskbar provide quick controls to sites that support them. Using Thumbnail preview controls, you can pause or rewind a video if the pinned site supports them. You can also tear tabs off within Internet Explorer 9 by dragging it away from the browser and using **Windows Aero Snap** to position the content side by side in one continuous motion, just like a native application.

**Your websites shine.** The new browser frame of Internet Explorer 9 makes any website shine. Simplified yet enhanced, the user interface brings sites forward. The browser frame is uncluttered with all browser controls quietly resting in glass, keeping the focus on your sites. Characteristics of each website are reflected throughout the browser, allowing users to be more immersed in each site they visit. The browser fades into the background, bringing site branding to the forefront with the features you need quietly discoverable.



*Internet Explorer 9 lets your website shine*

Designed based on what people use most, the navigation controls in Internet Explorer 9 are simplified. The **Back** button is larger, the **Address Bar** and search box are combined into one new address bar that respects the user's privacy, and the multiple menus from previous versions of Internet Explorer are consolidated into a single menu. You only see what's essential to your browsing experience on the Internet today.

## New features at a glance

This section provides descriptions of the new features in Internet Explorer 9. More information about each feature can be found in the audience sections of this guide.

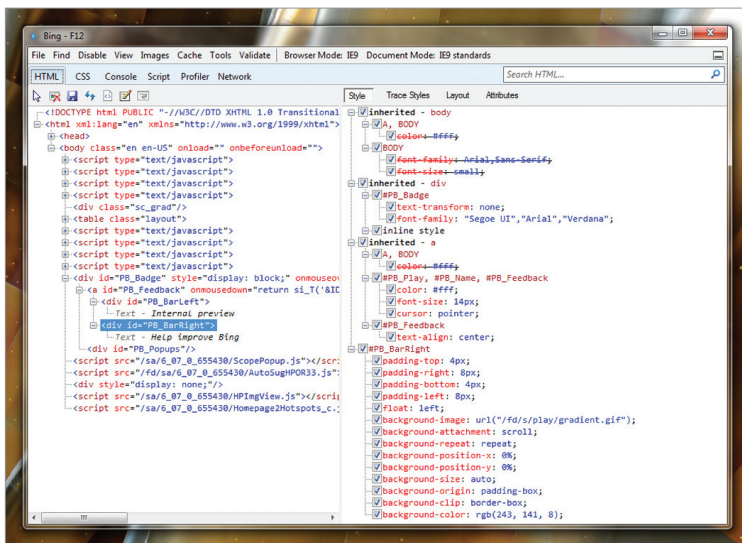
### Enjoy an all-around fast experience with Internet Explorer 9

Designed to take full advantage of your Windows-based computer's hardware, Internet Explorer 9 enables developers to build graphically rich and immersive web experiences that are as fast and responsive as applications installed on your computer. These new features make the web *all-around fast* with Internet Explorer 9.

**Hardware-accelerated graphics.** As an example of how Internet Explorer 9 takes advantage of the power of the whole computer, the rendering of graphics and text has been moved from the CPU to the graphics card (the graphics processing unit or GPU), using the Direct2D® and DirectWrite® sets of Windows application programming interfaces (APIs). Hardware-accelerated text, video, and graphics mean that your websites perform like applications installed directly on your Windows-based computer.

**New DOM and new JavaScript engine.** The newly optimized document-object model (DOM) in Internet Explorer 9 provides dramatic speed improvements by interacting more efficiently with Chakra the new JavaScript engine. Chakra interprets, compiles, and executes code in parallel by taking advantage of multiple CPU cores. While each of these is significant on its own, combining these changes, along with using hardware-accelerated graphics, makes the browser fast.

**F12 developer tools.** Internet Explorer 9 provides built-in developer tools which aid developers in rapid



prototyping, testing, and debugging webpages by making changes to code from within the browser itself which can then be previewed.

New in this version of the browser are a user-agent switching tool, a network traffic inspector, an improved JavaScript profiler, and integrated support for new web standards introduced with Internet Explorer 9.

For more information on features that make Internet Explorer 9 all-around fast, see the Consumer, Developer, or IT Professional audience sections later in this guide.

Internet Explorer 9 has updated F12 developer tools

## Focus on the websites you care about with a clean experience in Internet Explorer 9

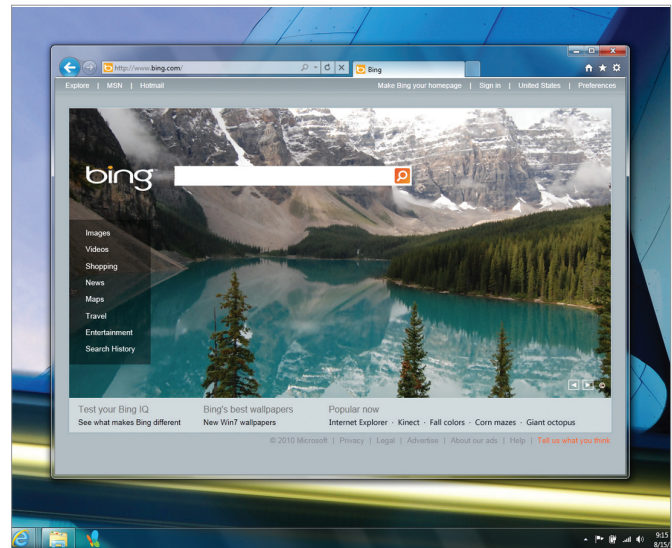
With a *clean* look and an increased viewing area, Internet Explorer 9 puts the focus on the things you love and makes your websites shine.

**Clean browser user interface.** In Internet Explorer 9, the simplified user interface and site-centric user experience puts the focus on the content of each website. By default, only the controls essential for browsing are in the browser frame. The controls that are in the browser frame are the controls that users have said that they want and use most. This means less screen real estate is taken up by the browser, letting people browse and experience more of what their sites have to offer.

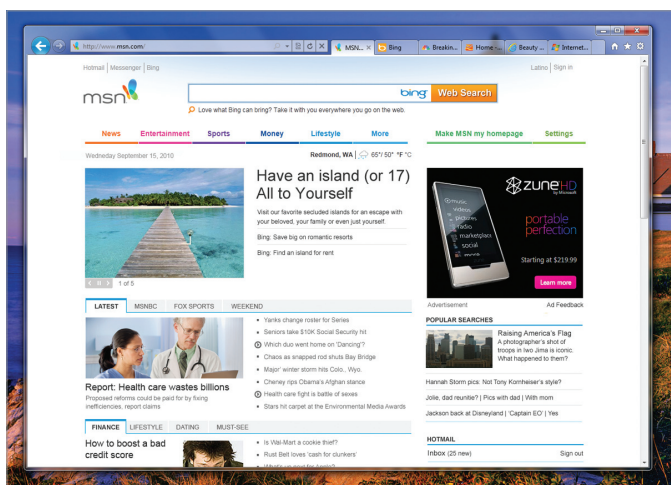
**Notification Bar.** We've minimized the overall amount of notifications to minimize distractions and quiet the experience while you are browsing. When notifications need to be shown in Internet Explorer 9, messages are shown within your browsing flow and are designed to be less disruptive. You are not forced to stop browsing to respond to notifications before you can continue browsing. All notifications now appear in the **Notification Bar** at the bottom of the browser. Messages in the **Notification Bar** are clearer and help you understand what you need to know. For example, instead of receiving the message "Internet Explorer is not responding," you receive the message, "The website is not responding" alerting you to a problem with the site. Notifications like this one include the website name as part of the notification.

**One Box. One Box** gives users a single place to start whether they want to navigate to a specific site or search for a site. **One Box** in Internet Explorer 9 incorporates search functionality into the address bar. With **One Box**, you can: navigate to a site, search for a site, switch between search providers, or access browsing history, Favorites, or suggestions from search providers. The information is presented clearly so you can recognize and use it immediately.

The privacy of the keystrokes that you enter into One Box is an important part of Internet Explorer 9. By default, the keystrokes you type are kept private. You are in control of what information gets shared with search providers, such as whether or not you receive search suggestions from a selected search provider as you type in



*Internet Explorer 9 puts the focus on your website not the browser*

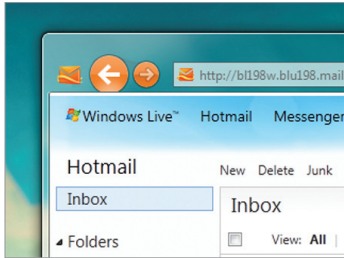


*One Box can, if you choose, perform searches as you type*



One Box. Text that you type in One Box is sent to the search provider as you type it (instead of when you finish typing and press enter) but only if you choose to turn on search suggestions.

**Pinned Sites.** With Pinned Sites, your favorite websites can be accessed directly from the Windows taskbar without having to first open the browser. You can pin sites to the taskbar by dragging the tab or the icon to the left of the URL from **One Box** to the taskbar. With Pinned Sites, you can easily find and launch those sites accessed most often – just like native applications on the PC. When a pinned site is launched from the taskbar, the browser frame and navigational controls integrate the site's icon and primary color, emphasizing the site and providing an even more site-focused experience.



*Internet Explorer 9 takes on the icon and color of the site*

**Windows 7 navigation.** Web navigation is easier in Internet Explorer 9 with features that are integrated with Windows 7 navigation, such as Jump Lists, Aero Snap, and thumbnail controls.

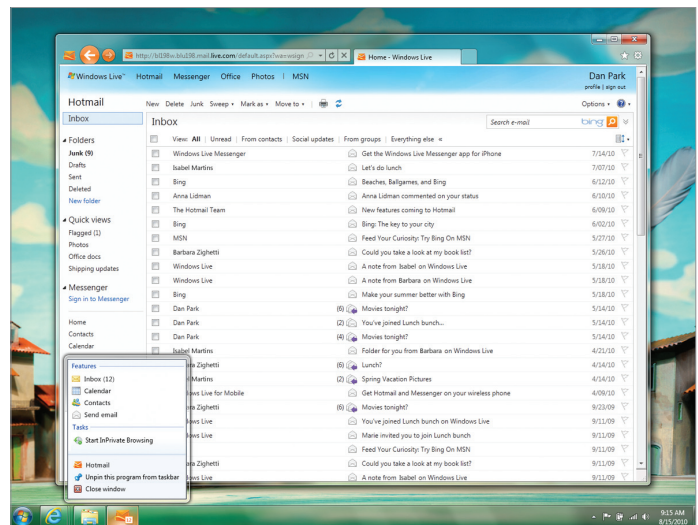
**Jump Lists.** Jump Lists are a quick way to get to a common task without having to launch the browser first. For pinned sites that support Jump Lists, you can quickly create a new email message or check your inbox.

**Tear-off tabs and Windows Aero Snap.** You often need to use more than one website or page to accomplish a task. Tearing off a tab by dragging it away from the browser and using Aero Snap to position the content is a great way to show two sites or pages side by side. Some examples include comparing products from different websites, watching a video while going through email, or looking at a map while reading an itinerary for a trip. To tear off a tab, click a tab and drag it to the edge of your screen. Content on the site is rendered continuously just like a native application; for example, videos continue to play as you tear off and drag a tab.

**Thumbnail preview controls.** Thumbnail preview controls available on the Windows 7 taskbar provide quick navigation to the sites that you want to visit. When a site is pinned to the Windows taskbar that supports thumbnail preview controls, you can simply click these to control the website content (like pause or rewind a video).

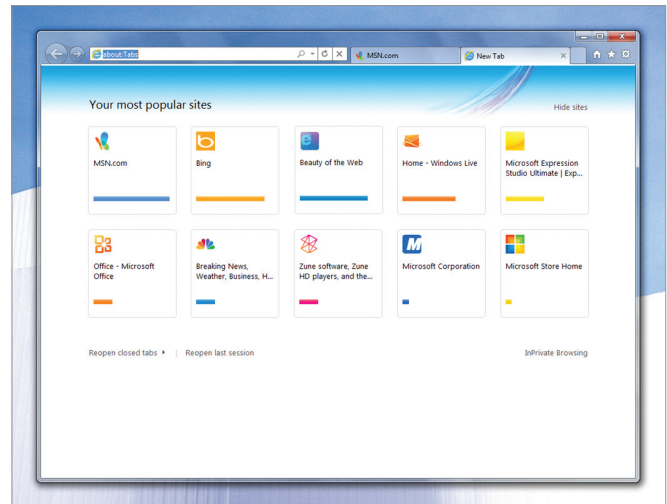
**Icon overlays.** Icon overlays are available on Windows 7 taskbar for pinned sites, and provide an indication of personalized web site specific status such as the number of new messages.

**Enhanced tabs.** Internet Explorer 9 provides improvements to new tab pages, the ability to re-arrange tabs, and to tear off a tab from within a browsing session.



*The Hotmail icon shows the icon overlay indicating new messages*

**New Tab page.** We know that when you create a new tab, your intent is to navigate. Internet Explorer 9 focuses on making this experience fast by visually suggesting the sites you want to visit. The new tab page displays tiles for the sites that you visit frequently, to help get you where you want to go quickly and without hesitation. Each site is represented by a tile with a large favicon and a title, and you can track your browsing habits with an activity meter on each tile. From the new tab page, you can also reopen closed tabs, reopen your last browsing session, and start an InPrivate Browsing session.



*Access the sites you visit the most in one place*

**Address Bar Top Result.** Another new feature that speeds browsing is Address Bar Top Result. Address Bar Top Result helps you remember the web address for common websites by taking you directly to the top results of your search provider without first displaying the search results page. For this behavior to work, the Address Bar Top Result service must be enabled by the search provider.

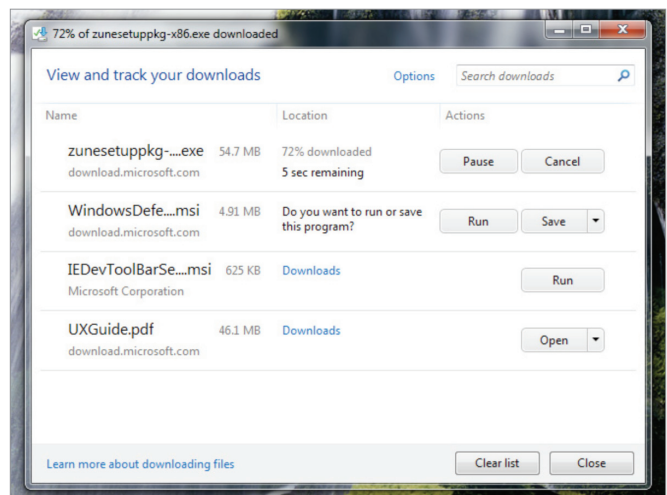
For more information on features that put the focus on web applications and provide a *clean* browsing experience, see the Consumer, Developer, or IT Professional sections later in this guide.

## Feel the confidence and trust that you are in control with Internet Explorer 9

Internet Explorer is the trusted way to surf the web because it has a robust set of built-in security, privacy, and reliability technologies that help keep you safer and your browsing experience virtually uninterrupted. These new features help provide the trust you need to feel safer online.

**Download Manager with SmartScreen Filter Integration.** Internet Explorer 9 provides the first download manager with integrated SmartScreen malware protection and introduces SmartScreen download reputation.

SmartScreen download reputation is a groundbreaking browser feature that uses reputation data to remove unnecessary warnings for well-known files, and show more severe warnings when the download has a higher risk of being malicious. Users today are often conditioned to ignore generic warnings that are shown for every download. Other browsers show the same warning whether a file is an extremely common program or a piece of malware created literally minutes ago. Internet Explorer 9 is the only browser that uses download reputation to help users make safety decisions.



*The new Download Manager in Internet Explorer 9*

With the new Download Manager, you can easily view download progress, open content that you've downloaded, or cancel a download that is in progress. A default folder is used for all downloaded content, so you can also change the default download destination folder, as well as search the folder for a previous download.

Because file downloads are the primary way for malicious sites to push malware onto computers, Download Manager makes several security-related checks on downloads:

- Scans for viruses.
- Verifies that an executable comes from a trusted source by using WinTrust service (connected to third-party trust providers).
- Uses reputation data to inform you of potentially dangerous downloads (service not available in initial release of Internet Explorer 9 Beta, but will be activated shortly after Beta release for you to upgrade).

**Add-on Performance Advisor.** Building on the feature in Internet Explorer 8 that exposed add-on load time, Add-on Performance Advisor notifies you when add-ons are slowing down your browsing session. You are notified if the total load time of all enabled add-ons takes more than 0.2 seconds, giving you an opportunity to make an informed decision to use the add-ons that you find valuable and disable those that are less useful or too slow.

**Hang Recovery.** New in Internet Explorer 9, this feature isolates the impact of a hung tab to the individual tab, so that other tabs and the overall browser continue to operate. When a website hangs because of a long running script or other operation, it causes your browser to become nonresponsive. Hang recovery in Internet Explorer 9 means you can continue browsing on other tabs. This new feature compliments tab isolation and automatic crash recovery, which also helps to keep you browsing and prevent the loss of information.

**Compatibility View.** You can feel good that your favorite websites will run in the newest version of Internet Explorer. Working with the top sites in the world, we test to see how they run on Internet Explorer 9. If Internet Explorer 9 detects a website that has not specified its desired display mode, the **Compatibility View** button appears next to the **Refresh** button on the **Address Bar**. Pressing the **Compatibility View** button causes Internet Explorer 9 to switch to a legacy document mode. The state of the button is saved for that webpage, eliminating the need to press it again when the user returns to the same page at a later time. You can choose to receive a list of sites best viewed in Compatibility View mode that we update based on input from the top sites. When navigating to a site on the list, Internet Explorer 9 automatically displays the site in Compatibility View mode, without requiring that you press the **Compatibility View** button.

**Automatic Updates.** Getting the latest browser updates helps keep you protected over time. You can choose to have important updates installed automatically, once they are made available. Automatically installed updates can include security updates, critical updates, definition updates, update rollups, and service packs through Windows Update.

**Group Policy support.** For IT Professionals, Internet Explorer 9 continues to provide excellent Group Policy support. With nearly 1500 Group Policy settings, including new settings to support Internet Explorer 9 features, IT professionals have the control they need to manage Internet Explorer installations after deployment.

## Write interoperable markup with HTML5 and Internet Explorer 9

Extensive support for HTML5, SVG, CSS3, ECMAScript5, and DOM provides a new set of capabilities that will help enable developers to write one set of markup and know that it will work and look the same in all modern browsers. Internet Explorer 9 was designed with support for industry standards built in to help ensure that the *same markup* works the same across browsers.

**HTML5 Support.** Internet Explorer 9 builds on the work done to implement HTML5 features in Internet Explorer 8, and adds several compelling features. Support for the **video** and **audio** elements enables native, hardware-accelerated video and audio content on a webpage without the need for a plug-in. Developers can now insert a video or audio clip onto their page as easily as they do an image. Plus, support for the **canvas** element enables easy and dynamic graphics rendering, all while taking advantage of hardware acceleration through Windows and the graphics card. Additionally, support for the **Selection** APIs enables programmatic selection of text on a page, and HTML parsing improvements help make HTML authoring more versatile.

**DOM Level 2 and Level 3.** Internet Explorer 9 adds support for more of the Document Object Model Level 2 (DOM L2) and Level 3 (DOM L3), and improves DOM L2 support over existing implementations. These DOM additions are taken from several DOM specifications, including DOM L2 and L3 Core, DOM L2 Views, DOM Element Traversal, DOM L2 and L3 Events, DOM L2 HTML, DOM L2 Style, DOM L2 Traversal and Range, and WebIDL (interactive data language).

**SVG.** As the Scalable Vector Graphics (SVG) standard has developed, developers have been requesting native support in Internet Explorer, and it is available in Internet Explorer 9. Support for SVG in Internet Explorer 9 enables powerful, attention-grabbing visuals with incredible detail, all without the need for a separate download or plug-in. Like all the graphics, text, and media features in Internet Explorer 9, SVG in Internet Explorer 9 takes advantage of hardware-accelerated graphics.

**CSS3.** Building on the work that was done in Internet Explorer 8, which is fully compliant with the Cascading Style Sheets Level 2.1 (CSS2.1) specification, Internet Explorer 9 adds support for many components of CSS3, enabling even more flexibility and functionality for web designers and developers. Internet Explorer 9 introduces features from several CSS3 modules, including the Backgrounds and Borders Module, Color Module, Fonts Module, Media Queries Module, Namespaces Module, Selectors Module, the Values and Units Module, and support for the Web Open Font Format (WOFF).

**ECMAScript 5.** The JavaScript implementation in Internet Explorer 9 is enhanced with many features defined by the latest edition of the ECMAScript standard. New ECMAScript 5 features introduce significant improvements to the JavaScript language and increase developer productivity. In addition, the Internet Explorer 9 DOM is designed to natively support ECMAScript 5 providing a consistent and natural programming model for developers when programming the Internet Explorer 9 DOM from JavaScript.



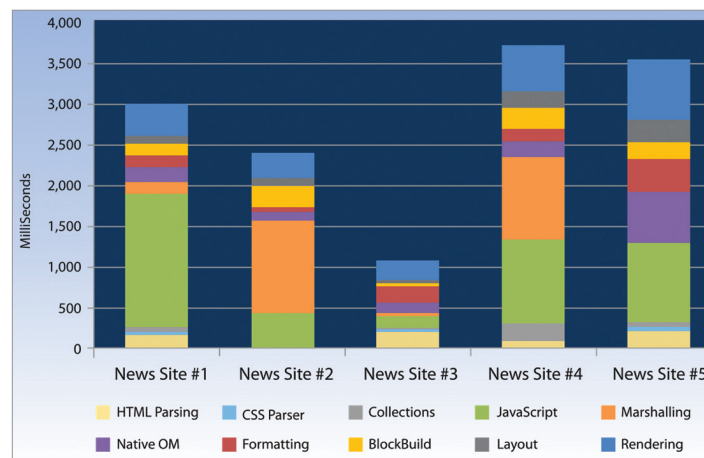
## Conclusion

Raise your expectations for the web. With Internet Explorer 9 you can take full advantage of Windows and modern hardware to help transform the capabilities of the web. You get an experience that makes your web feel as native as your favorite applications on your PC. Begin to enjoy a wave of immersive, beautiful websites. Developers will now be able to create with Internet Explorer 9. Help the web go native and unlock the Beauty of the Web with Internet Explorer 9 ([www.beautyoftheweb.com](http://www.beautyoftheweb.com)).

The next two sections are special feature topics regarding our approach to performance and the new user experience.

## Performance Improvements in Internet Explorer 9

Browser performance is a multi-dimensional problem. Many subsystems in the browser need to work together to display a page and allow you to interact with it. Optimizing for a single micro-benchmark that tests a single subsystem—as some browsers do—is a wholly insufficient approach for making a browser that is all-around fast. For example, the graph below shows you where five different news sites spend their time while rendering pages in Internet Explorer 8.



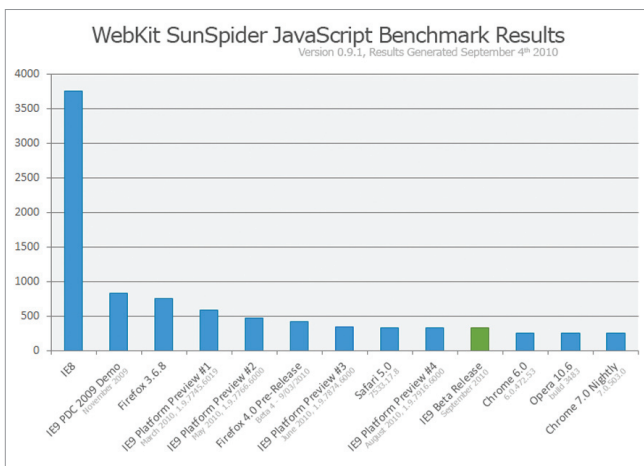
Each site has very different performance characteristics. Some spend a lot of time executing JavaScript, others spend a lot of time in marshalling, and some spend significant time in layout and rendering. To make a browser that is all-around fast, you have to understand how real websites are built. For Internet Explorer 9, we studied the development patterns used to build more than 7,000 real world websites, paying special attention to the top 1,000 websites worldwide. Our analysis covered more than 50 dimensions to build a deep understanding of the patterns of those sites. We took into account a range of performance characteristics including: time spent in different subsystems, use of common development frameworks like jQuery and DOJO, what analytics sites were using, how many script files the site was using, the size of the source code and what features they used.

Through this deep analysis, we were able to identify common development patterns used on websites around the world. We also looked at HTML5 applications to understand the patterns that will be used to build the next generation of web applications. Using these patterns to inform our decision making, we set about making Internet Explorer 9 all-around fast for the web sites of today and the web sites of tomorrow by carefully optimizing all our subsystems to be fast for those common development patterns

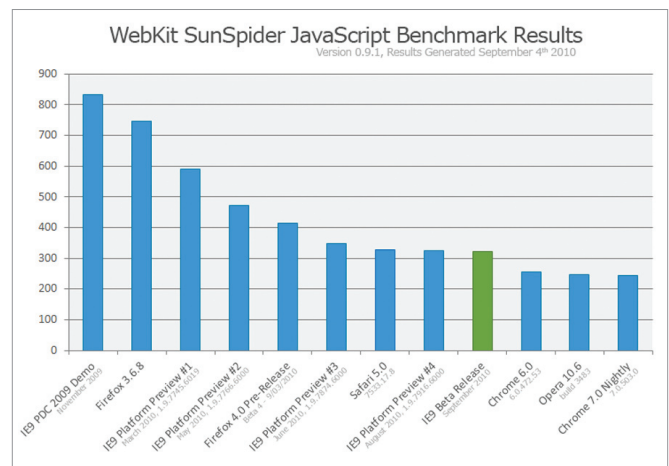
Examples include:

## Chakra, the new JavaScript engine

According to our Windows Experience Index data, modern PCs running Windows Vista and Windows 7 have—on average—2.42 CPU processor cores. Chakra, the new JavaScript engine, is optimized to take advantage of those multiple cores by compiling the JavaScript into highly efficient machine code in the background, while interpreting the JavaScript in the foreground. Once compilation is finished, Chakra switches to the compiled and significantly faster machine code optimized for that PC. Although not a goal for our performance work on Chakra, background compilation and many other improvements mean that Internet Explorer 9 scores very well in popular JavaScript benchmarks like WebKit's SunSpider.



WebKit SunSpider JavaScript Benchmark

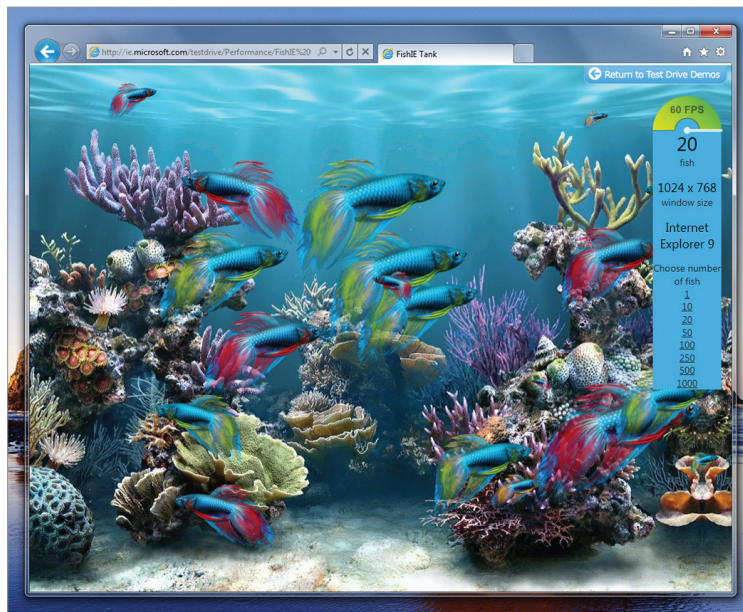


WebKit SunSpider JavaScript Benchmark

## Hardware-accelerated graphics

Many browsers take a lowest common denominator approach to performance and ignore much of the capabilities of the operating system and hardware in the PC. Internet Explorer 9 takes full advantage of both the operating system and hardware to fully accelerate rendering of web pages.

As an example, we use the graphics processing unit (GPU) when dealing with text, graphics, and new HTML5 technologies like Video, SVG, and Canvas. Over the last 10 years the computing power of the GPU has grown exponentially and today's GPUs can achieve more than one teraflop of computation. When you compare that to modern CPUs which have barely achieved 100 gigaflops of computation, you can see how much computation power can be unlocked through modern hardware.



*Hardware canvas FishIE Tank example*

Internet Explorer 9 leverages the power of the GPU through the DirectX®, Direct2D® and DirectWrite® API's to ensure that text is crisp, graphics and animations are smooth, and that HD video is stunning.

## Marshalling

When developers want to manipulate areas of a web page to create interactivity, they use JavaScript to interface with the DOM or Document Object Model for the page. In Internet Explorer 8, there is a “marshalling” layer between JavaScript and the DOM. Marshalling is like having a translator between JavaScript and the DOM because they don't speak the same language. That translation can take a significant amount of time. In Internet Explorer 9, Chakra, our new JavaScript engine, is now natively part of the browser. There's no longer a need for a translator because they both speak the same language. Removing the translator (marshalling) means that all communication occurs natively and performance has been greatly improved.

## New layout system

In addition to using the processor, it takes significant memory to hold a modern web page in memory—in some cases, 10s to 100s of megabytes. When you have several web pages open, you can begin to consume a significant amount of valuable memory on your PC. Internet Explorer 9 has an all new layout system that is optimized to reduce memory use, particularly for HTML5 websites, which will place even more demands on the browser. During our development, we found that for large and visually complex websites, our new layout engine reduced memory uses in some cases by as much as 50 percent.

In addition, the new layout system forms the foundation for the graphically rich HTML5 applications of tomorrow to ensure that HTML5 capabilities such as SVG are not only fast, but are also able to scale to the needs of developers.

## And many more performance optimizations

There are many, many more performance optimizations in Internet Explorer 9 from improvements in our network caching algorithms to being able to format web pages faster using CSS, to making sure that the most important APIs for web developers like `document.getElementById` are incredibly fast. The core of Internet Explorer 9 has been fundamentally designed around performance.

### What does our performance work mean?

You can feel the result of our performance improvements in your everyday browsing. Pages load and respond nearly instantly. For the next wave of HTML5 applications, the [www.ietestdrive.com](http://www.ietestdrive.com) site gives examples of rich and immersive HTML5 web experiences running on a browser architected from the ground up to be all-around fast. Compare your experience in those demonstration sites in Internet Explorer 9 with other browsers to get a feel for a truly all-around fast browser.

## Site-Centric Design Makes the Web Shine Through in Internet Explorer 9

Today, most popular browsers take a “browser centric” approach to their user interface (UI). “Minimal,” “fast,” “customizable,” “open,” and “simple” are all familiar terms that are used to describe the browser. Because today most people don’t really care about the browser itself, with Internet Explorer 9, we reimagined the role of the UI on Windows. We believe that you care about your favorite sites and applications; you care about the web. And today, far too often these experiences are relegated to second class status in terms of user experience and interactivity.

Part of breaking the glass ceiling on the web is enabling developers to change what we experience. With Internet Explorer 9, our focus on hardware-accelerated HTML5, which takes advantage of the power of the whole PC, is a paramount example of enabling developers to build the next big thing. That’s the “what.” The next critical ingredient is to change “how” the web is experienced. We look at the web as central to the Windows experience that people use every day. Windows and Internet Explorer 9 working together make the web better.

There are many tasks you rely on in Windows, especially in Windows 7, like snapping windows, personalizing the taskbar, and using Jump Lists. As we talked to Microsoft customers, it became clear that the browser shouldn’t create its own contained experiences; instead, it should integrate web experiences seamlessly into what you already do. Web browsers should behave and interact in a familiar way, so that you can do what you need to, when you need to. In short, a browser should meet your needs where you are right now.

Going Native: As a starting point, we looked at what you love about your native Windows applications when it comes to UI. In particular, customers want a clean, simple experience in Windows that pulls the tasks and applications they want to use to the forefront. The applications are close and readily accessible whether via the Taskbar or Jump Lists. It’s clean and immersive; the applications are at the forefront and nothing else. It’s intuitively interactive, meaning what you expect should happen, does happen: snap, drag-and-drop, etc.

We took all these insights about native Windows applications and applied them to the Internet Explorer 9 user experience. We took the best of Windows 7 and applied a site-centric design approach focused on letting sites shine through Windows so that the web on Windows just feels clean, simple, and natural. The result is an experience that is a native web, through Windows.

Similar to Windows 7 UI design, with Internet Explorer 9, we took a huge step back and asked ourselves what it is you do—and what you want to do—when you boot up your PCs and what you do when you open your browser. Over the course of this review, we discovered some things about how people use their computers, their browser, and the web:

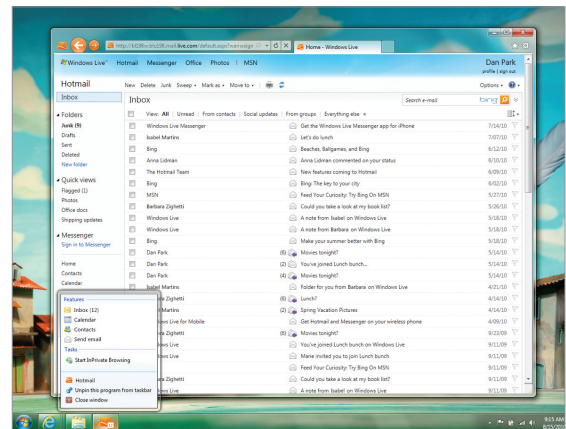
- While in Windows at home, people spend 57 percent of their time online, in their browser. But for most people, there's only a core set of features that they really use when they're on the web. In fact, there are only 12 actions that more than 50 percent of people do. These include basic things like closing a window, clicking a link, using the back button, using the Address Bar to navigate—all things that account for the basics of what people do in a browser.
- There are also a lot of behaviors that might surprise browser enthusiasts:
  - Fewer than 1/3 of users have opened the Favorites Center
  - Fewer than 1/4 of users have used the Home button
  - 15 percent of users have opened a link in a new tab with Ctrl+click
  - 7 percent of people have deleted their browsing history

With this information, we had a clear view of the most frequent actions you perform when we designed Internet Explorer 9.

Perhaps surprisingly, people tend to use more advanced features of Windows more than some of the basic features of the browser like Favorites and Home.

- 62 percent of people pin at least one non-default application to the Taskbar
- 87 percent of users have launched a pinned application from the Taskbar

The most important thing we learned from customer feedback is that people want the web itself, to be better. So in Internet Explorer 9, we took the same principles we applied to designing Windows 7—bringing the applications you use and tasks you do to the forefront—and decided the best thing we could do for the browser was to make it practically disappear. The best thing we could do for you is to make the web shine on your Windows-based computer. Most people don't want to spend time customizing their browser, but personalization happens naturally on the Windows-based computer. The personalization of favorite sites on the Windows 7 taskbar, for example, is the kind of site-centric design that makes the web feel like a native Windows application.

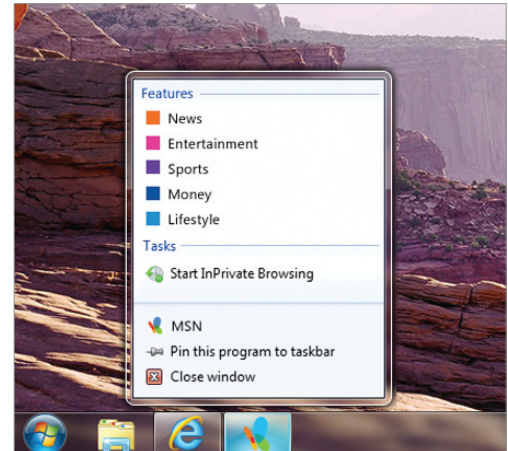


Internet Explorer 9 lets your sites shine



**Clean UI that makes your site shine:** When we started to look at the data on what people consistently use in the browser, we thought about what the web means to people and the analogy of a great film experience came to mind. We quieted most of the browser and left only the parts that would enhance the site. Just as a cinematographer might use lighting and color to highlight the most important parts of a scene, we designed the Internet Explorer 9 UI to highlight the websites a customer visits. With translucency in the browser frame and the highlighting of site branding with the icons and back button that pick up the main colors of the site, your site shines through and the browser fades away.

- **Seamless integration with Windows 7—Pinned Sites:** As the web has changed from being less about finding information and more about using applications and sharing information, customer preferences for using the Web have shifted as well. If a shortcut to Microsoft Outlook® can be on the taskbar, why can't a shortcut to Windows Live® Hotmail® be there as well? People have Zune® on their taskbar, why not their favorite music site? As we observed people in the lab and analyzed telemetry data, we saw two things happening. First, we observed that people who used the new taskbar in Windows 7 wanted to add sites to the taskbar to make access to workflow information more accessible. This was one of the most common requests for the feature. Second, we saw more and more time being spent in the browser—around 57 percent of PC use at home. As a result, we looked at how Internet Explorer 9 could make websites even better. We created the concept of pinning sites so that people could drag their websites to their Windows 7 taskbar and interact with them through Jump Lists, just like they can with native applications.



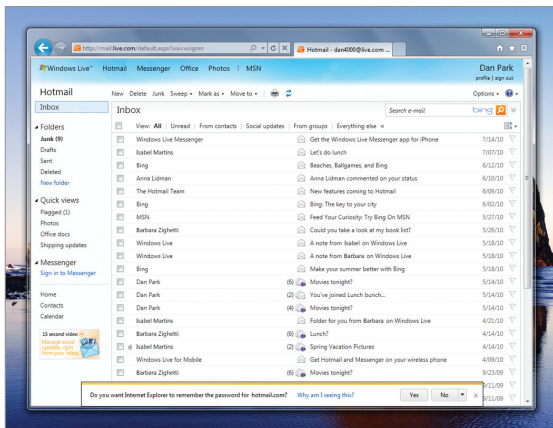
*Seamless integration with Window 7: Pinned Sites with Jump Lists*

- **Streamlined and Quieted—Notification model:** We made a commitment to performance and letting sites shine. Performance is not just about raw speeds, but also about how much actual time is taken up with anything besides visiting websites. When we looked at our notifications, we realized that our notification model was getting in the way of our performance gains. We knew we wanted to quiet the system and make it more fluid but it was a tough problem. Every dialog, gold bar, or notification had a reason for existing and provided value in certain situations.

To make progress, we didn't look at the problem from a technical standpoint but rather from the user's perspective. We organized every dialog or prompt in Internet Explorer into one of four user statements:

<p>"Why are you bothering me?"</p>	<ul style="list-style-type: none"> <li>• Interrupted from work</li> <li>• Asked to make decisions at the wrong time</li> <li>• Loss of control</li> </ul>
<p>"What do I need to do?"</p>	<ul style="list-style-type: none"> <li>• Language is unclear and inconsistent</li> <li>• Layout or flow provide no clear choice</li> </ul>
<p>"I don't care!"</p>	<ul style="list-style-type: none"> <li>• Desensitized to notifications as a whole</li> </ul>
<p>"Where do I look if I actually want to find something?"</p>	<ul style="list-style-type: none"> <li>• Too many channels through which notifications are surfaced</li> <li>• Same types of information are surfaced in different places</li> </ul>

When we looked at the notifications from the perspective of the customer, we saw the value in prioritizing which messages are presented and when. For example, security notifications are always kept on the forefront to ensure you have all security requirements you need. When we prioritized the notifications based on the four user statements, we were able to streamline notifications in the system, leading to a faster and more fluid browsing experience.



New Notification Bar in Internet Explorer9

Sites shine through while the browser fades into the background, bringing site branding to the forefront and making browser buttons and UI quietly discoverable. And the elements of Windows that you use most often are extended to the web so you can snap browser windows, use Jump Lists, pin the sites you care about directly to the taskbar.



# Internet Explorer 9 Beta Product Guide for Consumers







# Internet Explorer 9 Beta Product Guide for Consumers

Windows® Internet Explorer® 9 delivers a more beautiful web. Websites start to look and perform as if they were native experiences in Windows.

Fast, clean, and trusted are the three tenets around which Internet Explorer 9 was designed for consumers. This section of the Internet Explorer 9 Product Guide details these focus areas.

## **All-around fast**

- Speed
- Hardware-accelerated text, videos, and graphics

## **Clean, with a focus on your websites**

- Clean browser interface
- Seamless with Windows 7
  - One-click navigation
  - Pinned Sites
  - Jump Lists
  - Windows Aero® Snap
- Streamlined and quieted
  - Streamlined navigational controls
- Smarter address bar
  - Privacy of information

## **The browser people can trust**

- Built-in security and privacy
  - SmartScreen Filter
  - Introducing SmartScreen download reputation
  - SmartScreen URL filtering improvements
  - InPrivate Browsing and InPrivate Filtering

- Protection against a number of emerging threats
- Domain highlighting
- Take control of downloaded files
  - Add-on Performance Advisor
  - Download Manager
- Reliability
  - Tab isolation, automatic crash recovery, and hang recovery
  - Compatibility View

Read on for more detail about each of these areas, including feature descriptions, usage scenarios, and screenshots.

# All-around Fast

Part of reimagining the role of the browser as software that delivers an immersive, compelling web experience is rethinking the concept of fast. It can't continue to be defined just as page load time. To be fast, a browser must load and let you interact with applications at lightning speed, leveraging the power of hardware through Windows. In addition, you must be able to get to the content that you care about most in as few clicks as possible.

## Speed

Windows Internet Explorer is all-around fast, delivering graphically rich and immersive experiences that are as fast and responsive as the applications installed on your computer. Internet Explorer 9 has major performance improvements that make Internet Explorer start fast and stay fast over time.

## Hardware-accelerated text, videos, and graphics

New graphic capabilities and improved performance provide immersive and rich experiences in Internet Explorer 9. Hardware-accelerated text, video, and graphics mean your websites perform like the applications that are installed on your Windows-based computer. High-definition videos are smooth, graphics are clearer and more responsive, colors are truer, and websites are more interactive. Websites and applications load faster and are more responsive with sub-system enhancements like the new JavaScript engine that utilizes the power of modern multicore processors to make the web feel incredibly responsive. Combined with the powerful graphics capabilities of the Windows 7 operating system, Internet Explorer 9 is the best web experience on Windows.

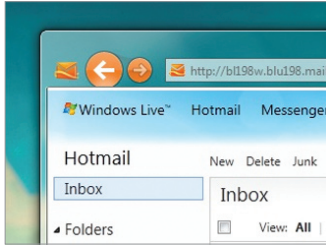
To experience some of these features in action, visit [www.beautyoftheweb.com](http://www.beautyoftheweb.com).

# Clean, With a Focus on Your Websites

Windows Internet Explorer puts the focus on the web with a clean look and feel that makes your websites shine. With a site-centric approach, Internet Explorer 9 delivers one-click access to websites pinned directly to your taskbar, fewer interruptions, and navigation that works seamlessly and intuitively with Windows 7. Simply put, Internet Explorer 9 focuses on the web, not the browser.

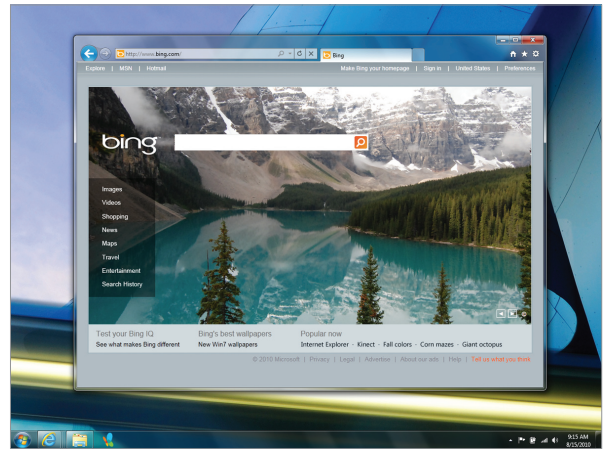
# Clean browser interface

The role of the browser is not to simply get out of the way, but to bring sites forward. In Internet Explorer 9, the simplified yet enhanced user interface and experience puts the focus on the content of each website. By default, only the controls essential for browsing are in the browser frame, quietly in glass, letting you browse and experience all that your sites have to offer.



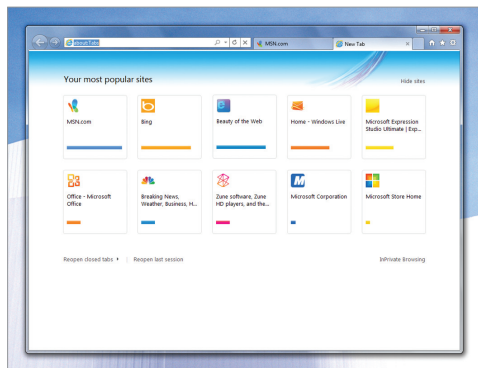
Primary colors and icon from the website integrate into the browser

Characteristics of each website are reflected throughout the experience, allowing you to focus on and be more immersed in the site's content. Elements of each website are integrated into the browser. If a site is pinned to the taskbar, when the site is launched, the navigational controls integrate the site's icon and primary color.



Internet Explorer 9 lets your website shine

The **New Tab** page has been revamped in Internet Explorer 9 to intelligently display the websites that users love most and put them one click away, so that navigation is simple and easy. New users are able to get started quickly, and returning users get meaningful suggestions and information that helps them decide what to do next as they browse.



Enhanced Tab Navigation

Each site's icon and primary color is used on the **New Tab** page to help users identify sites more easily. This is helpful when there are many sites to choose from. Also, a site indicator shows if the site is visited often or not. From the New Tab page, users can also reopen closed tabs, reopen the last browser session, clear the site indicators, or start InPrivate® Browsing.

**Note:** Sites visited while using InPrivate Browsing are not reflected as page visits on the **New Tab** page.

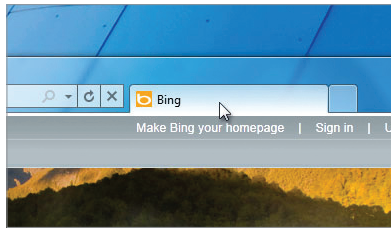
## Seamless with Windows 7

### Pinned Sites

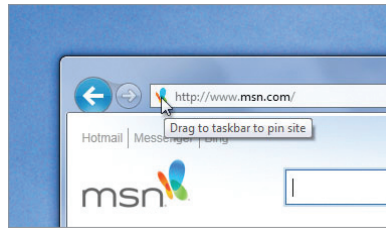
Most browsers visit a small number of websites daily, often several times a day. These sites are frequently full-featured web applications that have their own navigation, site search, and notification of new content that you

depend on rather than using browsing controls. By pinning a site, the site—not the browser—is at the center of the experience.

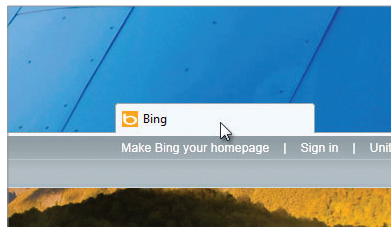
You can pin sites by clicking the icon to the left of the web address and dragging it to the taskbar. After a site is pinned, it shows up as its own thumbnail, separate from Internet Explorer. For ease of use, related sites are automatically grouped together in the taskbar. When a site is launched from the taskbar, the browser frame and navigational controls integrate the site's icon and primary color, emphasizing the site and providing an even more site-focused experience.



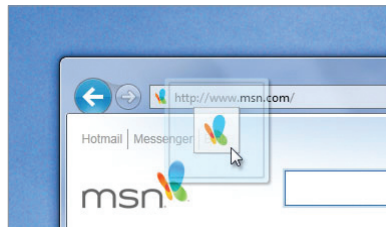
*You can pin tabs*



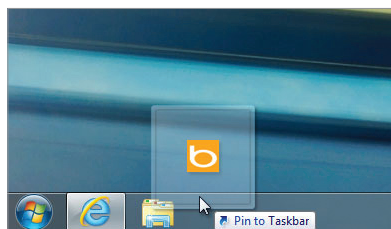
*Click and drag the site icon*



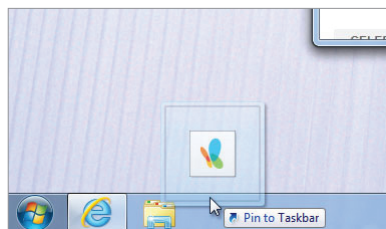
*Click and drag a tab in order to pin it*



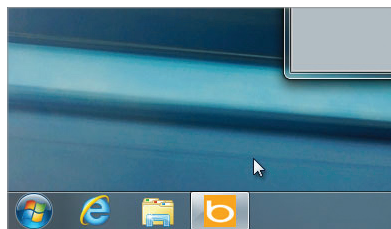
*The site becomes pinnable*



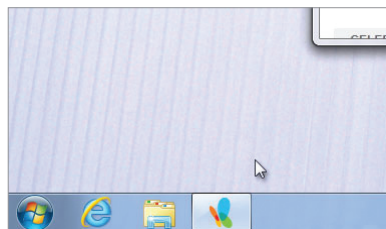
*Drag the tab icon near the taskbar*



*Drag the icon near the taskbar*



*Drop the tab icon on the taskbar to pin it*



*And drop it on the taskbar to pin it*

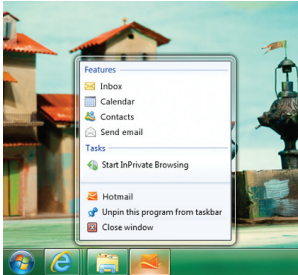
## Jump Lists

Beyond the ability to pin any website to the Taskbar, Internet Explorer 9 also provides an integrated Windows navigation experience with websites that support Jump Lists and thumbnail preview controls in the taskbar.



Jump Lists take users right to the websites they use every day. They're a quick and easy way to visit frequently visited websites without first opening Internet Explorer. For example, a user may frequent a particular online bookstore and may always start with her wishlist. To open the Internet Explorer 9 Jump List, users can right-click the Internet Explorer icon on the taskbar. They'll see their pinned websites, as well as the sites that they visit often. There's also access to start InPrivate Browsing, open new tabs, or close a window.

Any website that's pinned to the taskbar also has a Jump List. What's seen in each of these Jump Lists depends on each website, but all of them include InPrivate Browsing, opening the site, unpinning the site, and closing the window.



Jump Lists



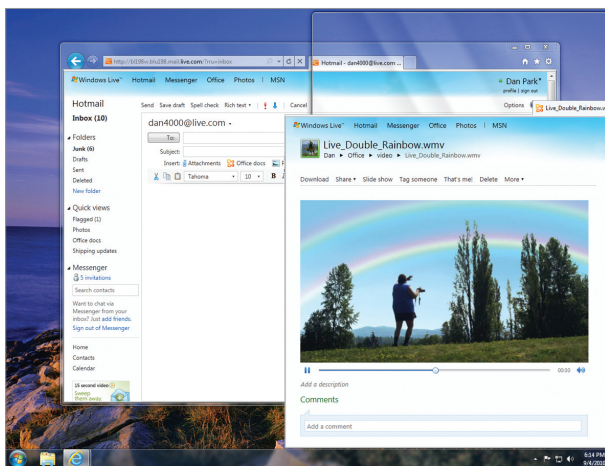
Preview Controls

Some websites that are pinned to the taskbar have additional controls. When a user hovers over a thumbnail for a website in the taskbar they may see things like playback controls, similar to the controls in Windows 7 for Windows Media Player.

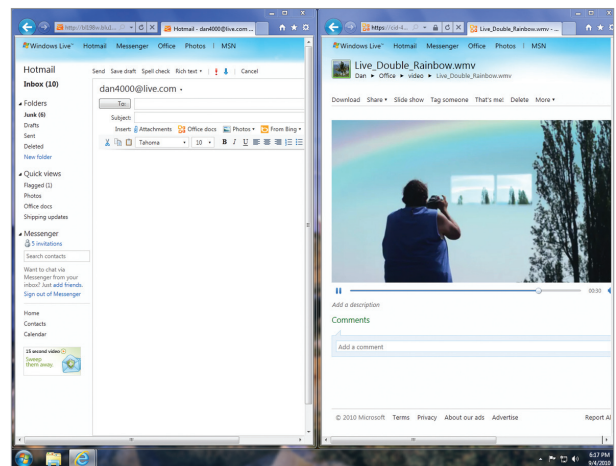
## Windows Aero Snap

Users often need to use more than one website or page to accomplish a task. Tearing off a tab and using Windows Aero® Snap is a great way to show two sites or pages side-by-side. Some examples include comparing products from different websites, watching a video while going through email messages, or looking at a map while reading an itinerary for a trip.

To tear off a tab, users click a tab and drag it to edge of their screen. Content on the site is rendered continuously and video keeps playing when snapping a window in place, providing a fluid experience.



Continuous video while dragging

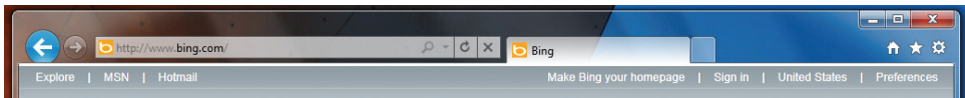


Aero Snap

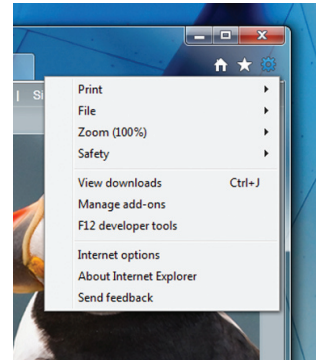
# Streamlined and quieted

## Streamlined navigational controls

Designed to highlight only the controls that you use most, the navigational controls in Internet Explorer 9 are streamlined and simplified. Because modern websites include much of the functionality that browsers had in the past, the new browser frame emphasizes the controls that are necessary for browsing, with customizations available to show more controls. The back button is one of the most used controls. In Internet Explorer 9 we've made access to it easy, making the Back button larger than in previous versions and placing it in the top-left corner of the window. The address bar and search box are combined into one, new address bar (called One Box), and the Tools menus are consolidated into a single drop-down menu. Only the functionality necessary for a modern browsing experience is shown.



Cleaner browser controls



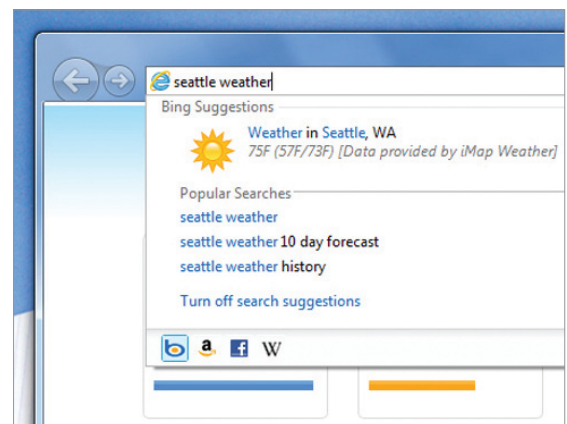
Menus appear off of the tools icon

## Smarter address bar

In Internet Explorer 9, search and navigation functionality is integrated into One Box. Now users have a single place to begin their online experience, whether they want to navigate or start a search.

In the new address bar, Inline AutoComplete anticipates what users are looking for and helps them get to websites quickly after typing just a few letters. For search providers that support top result, users don't have to worry about having to remember the full web address; they can type in familiar terms like "news" or "music" and can quickly get to the sites they love.

To search the web, users type their search query into One Box and get visual suggestions to help them find what they're looking for. The ability to switch between search providers or add new providers is integrated into the bottom of the address bar drop-down menu, making it easier for users to get results from different search providers quickly.



Smarter Address Bar

## Privacy of information

The privacy of the information that users enter is an important part of the Internet Explorer promise. Users are in control of what information gets shared with search providers. From the address bar drop-down menu, users are



able to opt in to search suggestions or turn them off. If they choose to turn search suggestions on, the text they type gets sent to the search provider as they type it (instead of when they finish typing and press enter).

# The Browser People Can Trust

You want to browse without interruptions and with the confidence that the experience is reliable, safe, and private. Windows Internet Explorer 9 includes built-in default settings that can help keep your computer protected from the first time you launch the browser.

## Built-in security and privacy

From the moment that Internet Explorer 9 is launched, built-in security and privacy technologies help keep you safer online.

### SmartScreen Filter

In Internet Explorer 9, we've continued to heavily invest in the industry-leading SmartScreen® Filter and the back-end reputation systems that power it. SmartScreen is a dynamic security intelligence and safety service designed to protect Internet Explorer users from phishing attacks and malicious software.

The SmartScreen investments in Internet Explorer 9 can be broken down into two major areas:

1. Download reputation—provides information about a downloaded program based on file and publisher reputation. Internet Explorer 9 is the only major browser providing integrated download reputation to help you make better trust decisions.
2. Improvements to SmartScreen URL reputation—Since the release of Internet Explorer 8, SmartScreen has blocked over 1.2 billion malware and phishing attacks. We've continued to invest heavily in this area for Internet Explorer 9.

### Introducing SmartScreen download reputation

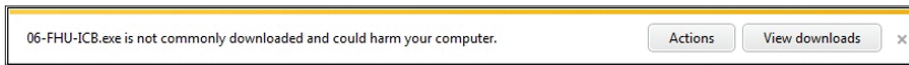
SmartScreen download reputation is a groundbreaking browser feature that uses reputation data to remove unnecessary warnings for well-known files, and show more severe warnings when the download is a higher risk of being malicious. Many people are often conditioned to ignore the generic warnings that are shown for every download, such as: "This file type can harm your computer. Are you sure you want to run this file?" This same warning is presented whether the file is an extremely common program or a piece of malware created literally minutes ago. Other browsers leave it up to you to decide if a program is safe to download and run from the Internet; Internet Explorer 9 is the only browser that uses download reputation to help you make safety decisions.

#### Why is this approach important?

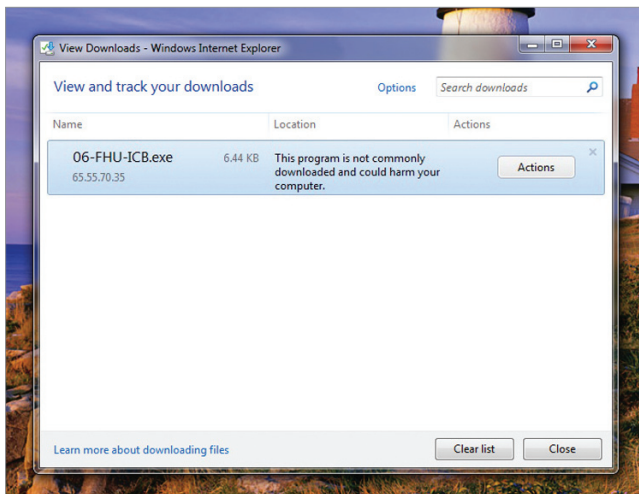
The primary reason is that computers remain unprotected between the time of the initial attack and the time it is detected and blocked. Blocking after detection is still an important strategy, but for Internet Explorer 9 we wanted to turn the problem on its head. Download reputation is meant to fill the gap between attack and detection by warning you when a downloaded program is uncommon and higher risk.

## What will my experience be if a download doesn't have positive reputation?

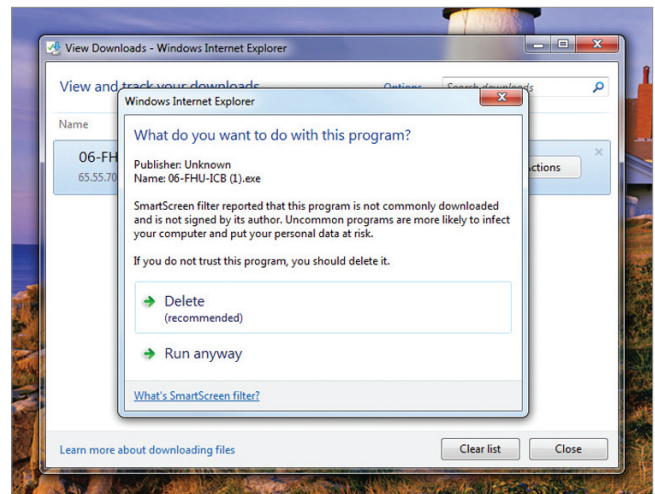
A downloaded program is first checked against our application reputation service. For the vast majority of downloads, the downloaded program will have a positive reputation and the program can be downloaded and run with no browser warnings. However, in the rare case that a download does not have positive reputation, you are warned and must choose an option from the **Actions** button found on the notification bar or in the Download Manager. This warning gives you additional context on the risk of your activity and you can choose to proceed or not. We have several versions of the warning UI that we'll be testing through the beta period, one of which is shown below.



Uncommon download warning in notification bar



Uncommon download warning in Download Manager



Uncommon download warning Action Button with user choices

## What will my experience be if a download doesn't have positive reputation?

A downloaded program is first checked against our application reputation service. For the vast majority of downloads, the downloaded program will have a positive reputation and the program can be downloaded and run with no browser warnings. However, in the rare case that a download does not have positive reputation, you are warned and must choose an option from the **Actions** button found on the notification bar or in the Download Manager. This warning gives you additional context on the risk of your activity and you can choose to proceed or not. We have several versions of the warning UI that we'll be testing through the beta period, one of which is shown below.

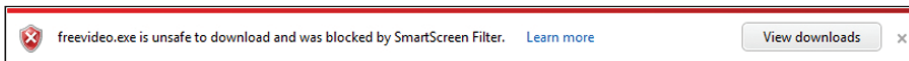
## Why can't I see this functionality early in the Beta release?

For a period of time just after the beta release, the feature will be running in silent mode while we finalize the data models. Our goal is to make this feature as useful and non-intrusive as possible so collecting real-world data about its behavior and performance is critical prior to public release. When we've confirmed we have the desired data quality, the feature will be enabled for all beta users with no code update required.

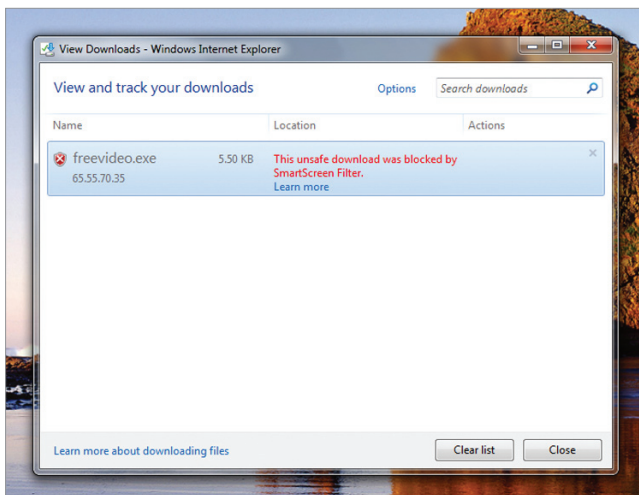
## SmartScreen URL filtering improvements

The SmartScreen URL filter continues to be a key user safety investment in Internet Explorer 9. Since the launch of Internet Explorer 8, SmartScreen has blocked over 1.2 billion malware and phishing attacks and continues to block between 3 and 5 million attacks each day. We are committed to continuously improving our intelligence systems and processes so we can continue to provide industry leading protection from phishing and malware. We've also made improvements to the SmartScreen block experience in two core scenarios to ensure that you clearly understand the risks involved.

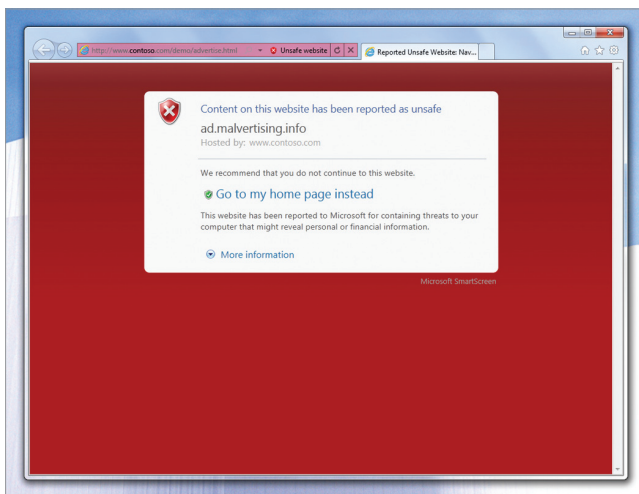
The new Download Manager blocks downloads from known malicious websites. When a malicious download URL is detected, a warning is shown both in the new notification bar and in the Download Manager. At this point, you can continue the download if desired, otherwise the download is cancelled and removed automatically.



*Blocked download in notification bar*



*Blocked download in Download Manager*



*Example of a malicious ad (malvertising.info) hosted by a benign website (www.contoso.com)*

The SmartScreen block experience has also been improved when protecting users from malicious content hosted on a benign page. This is most often caused by malicious advertising. For these scenarios the SmartScreen block page has been updated to be clear when hosted content is malicious rather than the hosting website.

## InPrivate Browsing and InPrivate Filtering

Sometimes customers don't want to leave a trace of their Webweb browsing activity on their computers. Whether it's shopping for a gift on a shared computer or checking email at an Internet café, there are times when you don't want to leave any evidence of your browsing or search history for others to see.

InPrivate® Browsing helps prevent browsing history, temporary Internet files, form data, cookies, usernames, and passwords from being retained by the browser. You can start InPrivate Browsing from the New Tab page, from the Internet Explorer Jump List, or by selecting InPrivate Browsing from the Safety menu. Internet Explorer will launch a new browser session that

won't record any information, including webpages that you visit and searches that you perform. Closing the browser window ends the InPrivate Browsing session.

Some content, images, ads, and analytics on websites are often provided from third-party websites. While this content can provide value to you and websites alike, these websites have the ability to potentially track your behavior across multiple sites. InPrivate Filtering provides an added level of control and choice about the information that third-party websites can potentially use to track your browsing activity.

InPrivate Filtering is off by default and must be enabled on a per-session basis. To use this feature, you select InPrivate Filtering from the Safety menu. To access and manage differing filtering options for Internet Explorer 9, you can select InPrivate Filtering settings from the Safety menu. Closing the browser window ends the InPrivate Filtering session.

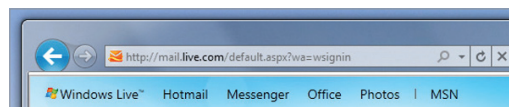
## Protection against a number of emerging threats

Cross-site scripting attacks are a leading online threat. They exploit vulnerabilities in the websites you use. Their aim is to capture keystrokes and record sign-in information for your accounts.

You might receive an email that contains a web address that has been tampered with. When they click the link, they're directed to a legitimate website that has been compromised to contain malicious content that can capture keystrokes and record your sign-in and password information. Just like in Internet Explorer 8, Internet Explorer 9 includes a cross-site scripting filter that can detect these types of attacks and disable the harmful scripts. This protection is on by default.

## Domain highlighting

For you, knowing the domain you're on at a glance helps you avoid deceptive sites. As in Internet Explorer 8, Internet Explorer 9 highlights the domain name in the address bar in black, while the rest of the URL is displayed in gray text. This makes it easier to identify the actual identity of the sites that you visit and helps to alert you about deceptive websites with misleading addresses. This can reduce the chances of compromising personal information while browsing.



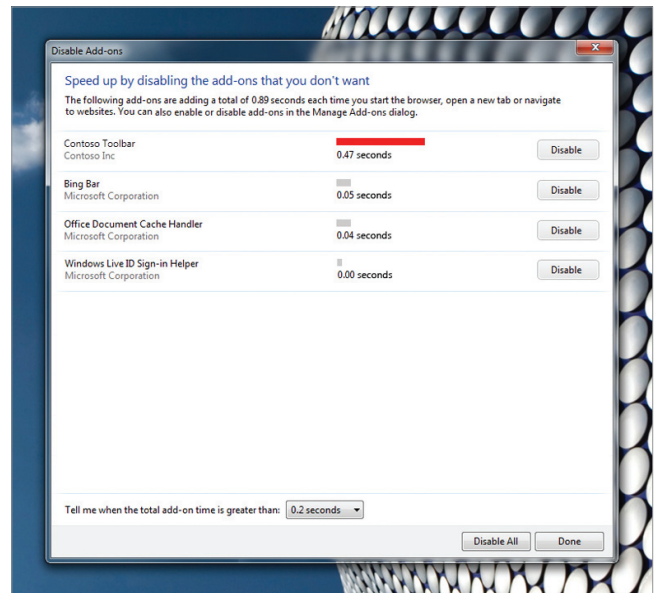
*Domain name highlighting*

## Take control of downloaded files

Internet Explorer 9 helps you control the files you download so they won't harm your computer or disrupt the performance of the browser.

## Add-on Performance Advisor

Internet Explorer 9 is designed to ensure that the browser starts fast and stays fast over time. Add-ons Advisor identifies add-ons that may be slowing down the browser and gives you the information you need to disable or fix it, directly from the Notification Bar itself. Load times for each add-on are shown, so that you can see how each add-on impacts your browsing experience each time you launch Internet Explorer 9 or open a new tab. You are notified if the total load time of all enabled add-ons takes more than 0.2 seconds, giving you the opportunity to make an informed decision to use the add-ons that you find valuable and disable those that are less useful or too slow. As a result, right out of the box and over time, Internet Explorer 9 helps you control the add-ons that you install.



*Add-on Performance Advisor*

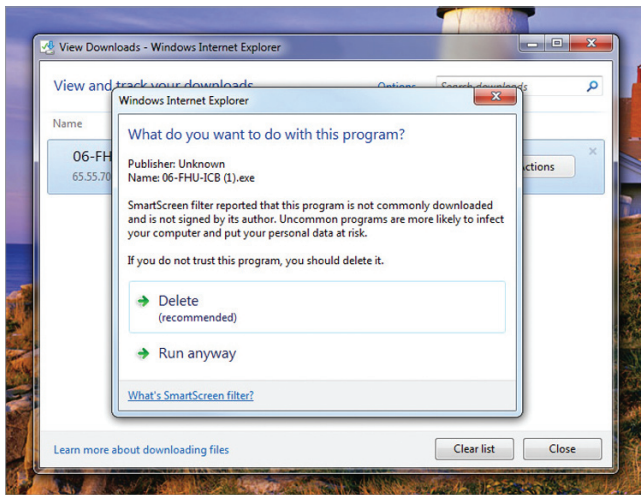
## Download Manager

New in Internet Explorer 9, the Download Manager provides you with the status of downloads, a secure area for downloaded files, and the final location where downloads are stored.

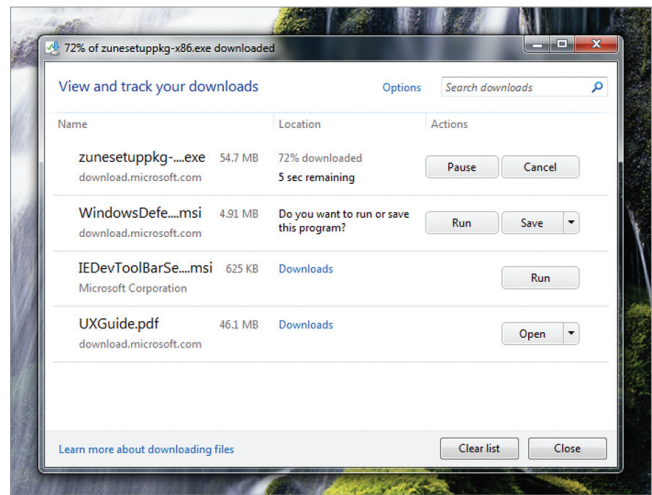
Download Manager provides a default downloads folder so that you don't have to pick a folder each time you download a file. It's an easy way to scan and interact with file downloads. For example, from Download Manager, you can open a previously downloaded file or share its download link with a friend. Download Manager also enables you to pause or cancel downloads. You can also delete downloads from Download Manager.

Whether downloading a small file or several large files, you can browse virtually without interruption. Download Manager integrates with the Notification Bar, giving you the ability to browse websites while also monitoring your downloaded files. This is especially helpful for longer downloads. If a download is interrupted, the files can be resumed on the next launch of Internet Explorer 9. So if you encounter a network connection problem or have to shut down your machine, you easily can pick up right where you left off.

Download Manager also uses SmartScreen download reputation to inform the you of potentially harmful files. In the Internet Explorer 9 Download Manager, downloaded programs are differentiated by their risk level. A commonly downloaded, low-risk application download will no longer be given the same warning and treatment as a newly released malware download. If SmartScreen determines that a downloaded program has positive reputation then unnecessary warnings are removed and you are not asked to make additional trust decisions before running the program. If an application does not have positive reputation, and therefore much more likely to be malicious, a warning is shown to help the you decide what to do with the download (see examples on next page).



Download reputation uncommon download warning



Download Manager—view and track your downloads

## Reliability

Regardless of website performance, Internet Explorer 9 is a reliable browser choice.

### Tab isolation, automatic crash recovery, and hang recovery

When a site isn't functioning correctly, an entire browsing session doesn't need to be interrupted. Reliability features like tab isolation and automatic crash recovery—features introduced in Internet Explorer 8—keep users browsing.

With tab isolation, website crashes are isolated to individual tabs, not entire browser windows. If a site crashes on one tab, the rest of the browsing session isn't interrupted; instead, you keep browsing, undisturbed. After the problem is identified, Internet Explorer automatically recovers the tab. If one or more of the tabs close or crash unexpectedly, the tabs are automatically reloaded, and you are returned to the sites you were on before the crash. Internet Explorer 9 includes new support for hang recovery. The impact of a hung tab is isolated to the individual tab, so that other tabs and the overall browser continue to run. You can continue browsing on other tabs.

We made the notification messages clearer in Internet Explorer 9 to help you better understand what to do when problems arise. For example, if a website causes the browser to stop responding, a message is shown in the Notification Bar that says the website is not responding, rather than saying Internet Explorer is not responding. You are able to better understand what the problem is, and what actions, if any, you need to take to address the issue.



## Compatibility View

Sometimes there are display problems with websites, such as out-of-place menus, images, or text boxes, because the site was designed for an older browser. Compatibility View automatically adjusts how webpages are displayed, so that websites and applications for older browsers work correctly. If you see display problems, you can press the Compatibility View button in the address bar and websites will be displayed as presented in Internet Explorer 8. You don't need to click the button for a website after you've done so. The next time that the you visit the site, Internet Explorer 9 will automatically display the site in compatibility mode. To turn off Compatibility View, you can click the Compatibility View button again.





# Internet Explorer 9 Beta Product Guide for Developers







# Internet Explorer 9 Product Guide for Developers

Windows® Internet Explorer® 9 has been designed to help the web development community create rich, interoperable, standards-compliant web applications by providing the platform, tools, and features for the future web. The latest version of Internet Explorer demonstrates a commitment to an interoperable Web through support for HTML5 and modern standards, enabling developers to use the same markup across browsers. By making development easier and saving you time, Internet Explorer 9 enables developers to create the next big thing on the web.

Internet Explorer 9 enables web developers to take advantage of the amazing hardware innovations happening in the Windows ecosystem because it leverages more of the operating system, taking advantage of the power of the whole computer.

Fast, clean, and interoperable are the three tenets around which Internet Explorer 9 was designed. This section of the Internet Explorer 9 Product Guide begins with a brief overview of how these three tenets relate to the Internet Explorer 9 features that matter most to developers. It then continues with a more in-depth look at some of the enhancements developers can take advantage of in Internet Explorer 9. We also encourage you to experience many of these developer features in action at the Internet Explorer Test Drive site (<http://ie.microsoft.com/testdrive/>).

## All-around fast

- Hardware-accelerated graphics and text rendering
- New, faster scripting and layout engines
- Enhanced built-in developer tools for site optimization

## Clean, with a focus on your websites

- Clear browser interface
- New native graphics capabilities
- Pinned Sites

## Interoperable with same markup

- Improved standards support to enable “same markup” across browsers
  - CSS3
  - DOM L2 and L3
  - ECMAScript 5
  - HTML5
  - Scalable Vector Graphics (SVG)
- Updated Compatibility Mode

Read on for more detail about each of these areas, including feature descriptions, usage scenarios, and screenshots.

# All-around Fast

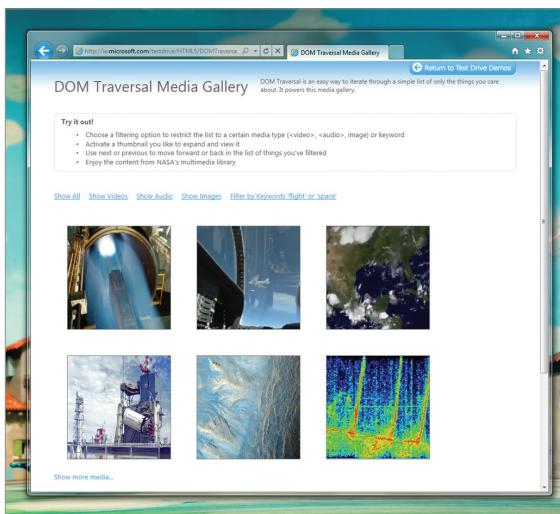
Internet Explorer is all-around fast, with GPU-powered HTML5 that enables website developers to take full advantage of the power of the users' computers through Windows. Platform-level performance enhancements including Chakra, the new JavaScript engine with compiled JavaScript and the new Document Object Model (DOM). These new features provide more graphically rich and immersive experiences.

## Hardware-accelerated graphics and text rendering

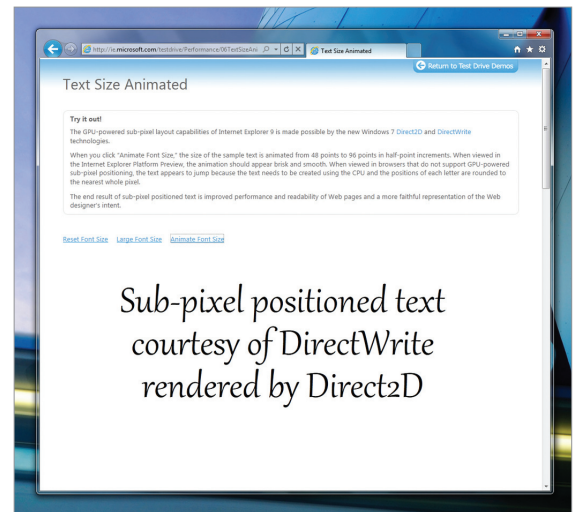
As an example of how Internet Explorer 9 takes advantage of the power of the whole computer, rendering of graphics and text has been moved from the CPU to the graphics card (graphics processing unit, or GPU), using the Direct2D® and DirectWrite® sets of Windows application programming interfaces (APIs). Hardware-accelerated text, video, and graphics means your websites perform like the applications installed directly on your Windows computer. Graphics are richer and more responsive, text is clearer and crisper, and high-definition (HD) video is smoother, all with real-time performance you expect on your computer. Best of all, because these changes are internal to the browser, web developers take advantage of these features automatically while creating sites with the same standards they're used to working with.

You can experience Internet Explorer 9 and its improved graphics performance by visiting the Internet Explorer Test Drive site (<http://ie.microsoft.com/testdrive/>) and clicking any of the links under "Speed Demos" or "Graphics Demos."

## New, faster scripting and layout engines



Internet Explorer 9 has extensive support for HTML5



Text size animation demo

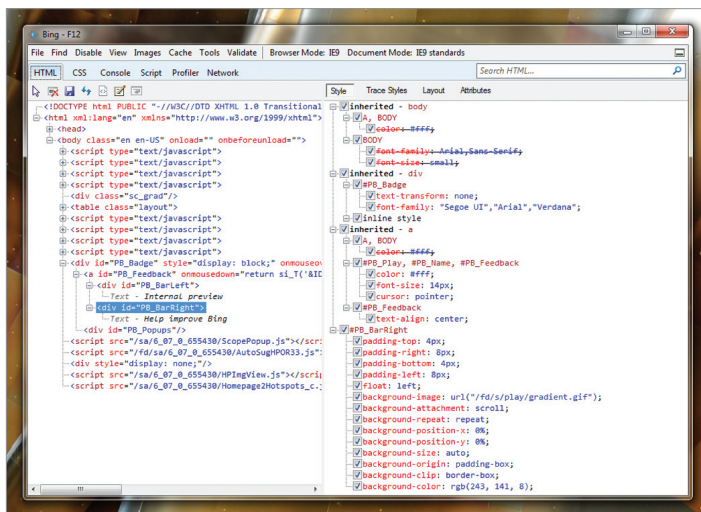
Script and layout performance are important parts of overall browser performance. Developers' pages and applications load and run noticeably faster with the new DOM, optimized layout engine, and Chakra, the new JavaScript engine that interprets, compiles, and executes code in parallel by taking advantage of multiple CPU cores through Windows.

The performance improvements enabled by the new scripting and layout engines in Internet Explorer 9 should be apparent immediately, but to experience several targeted demonstrations that display their full power, visit the Internet Explorer Test Drive site and click any of the links under "Speed Demos."

## Enhanced built-in developer tools

Internet Explorer 8 introduced built-in developer tools to aid in rapidly prototyping, testing, and debugging web-pages by enabling developers to test changes to their source code from within the browser itself before implementing the changes to their pages on the back end. The tools to edit and debug CSS and HTML, test and debug script, profile script performance, view or change the Document Object Model (DOM), examine applied rules, and trace the origin of style values have all become indispensable to Internet Explorer developers. Internet Explorer 9 adds to these capabilities several new features for fine-tuning site performance and layout. These include an improved JavaScript profiler, a user-agent switching tool, and a network traffic inspector, as well as performance improvements to the tools themselves.

With F12 Developer Tools in Internet Explorer 9, developers can now measure even more aspects of website performance than in previous versions of Internet Explorer. However, they can't measure the performance that you actually experience. To solve this problem, some sites develop their own libraries that try to measure live performance on webpages, but this can introduce overhead that actually slows down the pages for you.



New F12 developer tools

We believe that the W3C WebTiming specification—which, as of this writing, is in the “Working Draft” stage—is a good conceptual foundation for responsibly solving this problem. The WebTiming functionality can be accessed in Internet Explorer 9 using the window.msPerformance interface in the DOM. Developers can also access the window.msPerformance object from the JavaScript console in the developer tools. To see a demonstration of this functionality at work, visit the Internet Explorer Test Drive site.

## Clean, With a Focus on Your Websites

Internet Explorer features a clean, streamlined, speedier interface that puts the focus on developers' sites, rather than the browser itself.

### Clear browser interface

The new user interface enhancements in Internet Explorer 9 help to take emphasis off the browser and put it onto the developer's site, where it belongs. Internet Explorer 9 puts the focus on your websites and applications with increased viewing area and integration of your website into Windows, making your site shine.

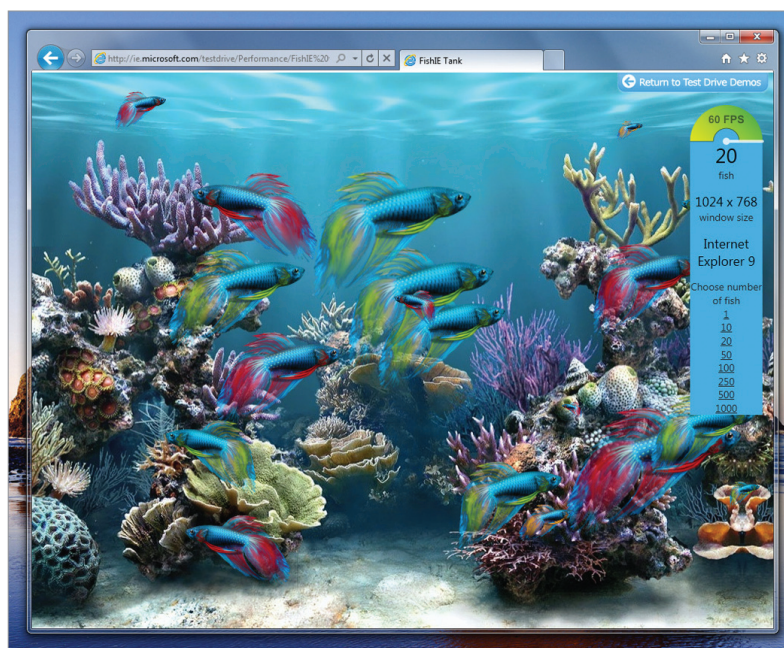
## New native graphics capabilities

Graphically rich and immersive experiences are enabled with hardware-accelerated graphics in Internet Explorer 9. Native support for the HTML5 video tag enables smooth streaming high-definition (HD) video, while the HTML5 canvas tag enables interactive graphic interfaces. Also, SVG support facilitates sharper graphics at any zoom level.

Image decoding is done by the Windows Imaging Component (WIC), which performs faster than the previous Internet Explorer image decoder, and enables support for embedded color profiles. New native support for embedded International Color Consortium (ICC) v2 and v4 color profiles means truer color, and makes Internet Explorer 9 a color-managed browser that renders colors in images the way the developer or designer intended. You can see a demonstration of color support in Internet Explorer 9 on the Internet Explorer Test Drive.

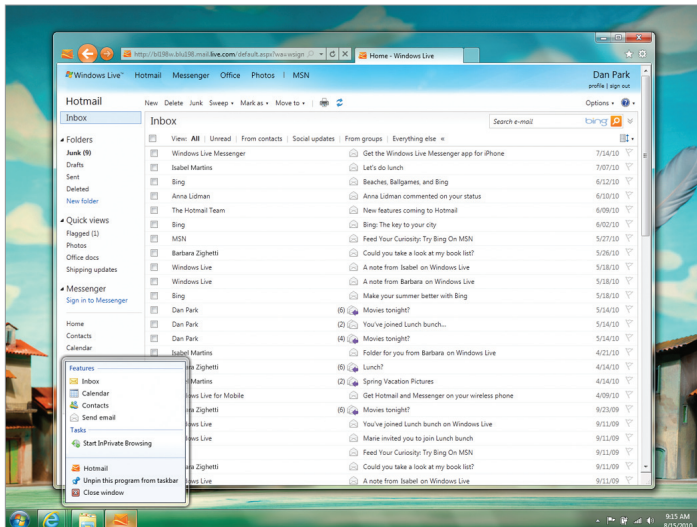
Text rendering is now handled by the DirectWrite® family of APIs, which uses sub-pixel precision to produce smooth, crisp text across font sizes and browser zoom levels and enable smooth text animation. For an illustration of the text capabilities of Internet Explorer 9, see the Text Size Animated demonstration on the Internet Explorer Test Drive site.

You can experience Internet Explorer 9 and its new native graphics capabilities by visiting the Internet Explorer Test Drive site and clicking any of the links under “Graphics Demos.”



*Hardware canvas FishIE Tank example*





Hotmail site pinned to the task bar

## Pinned Sites

When developers take advantage of Pinned Sites, users become even more immersed in their sites. Pinned Sites feature a site-enhanced user interface, with an enlarged favicon, plus **Back** and **Forward** buttons and other interface elements that can be unified with the brand and overall appearance of the site. Integration with Windows 7 enables new ways for you to experience developers' websites using the latest Windows APIs to create website Jump Lists, icon overlays, and thumbnail preview controls.

## Interoperable with Same Markup

Through active participation in standards development in the CSS3 and Scalable Vector Graphics (SVG) working groups, co-chairing the HTML5 Working Group, and leading the HTML5 Testing Task Force, we are actively helping to bring modern web standards to the Internet. Standards consistency is a top priority, as we have created and submitted 2,138 test cases to the standards bodies as of the release of the Internet Explorer 9 Platform Preview Build 4 on August 4, 2010. This ensures that, as browsers implement modern web standards and developers write to them, browsers and applications perform consistently.

## Improved standards support to enable “same markup” across browsers

Web browsers should render the same markup—the same HTML, Cascading Style Sheets (CSS), and script—in the same way. That's simply not the case today across many browsers and many elements of markup. Internet Explorer 9 works with the latest web standards, which means that developers can count on a standards implementation that supports responsible industry standards and that won't change overnight. Our investments in standards and interoperability enable the same markup to just work across browsers. When developers spend less time rewriting their sites to work across browsers, they have more time to create amazing experiences on the web.

Internet Explorer 9 introduces support for modern web standards, including:

- CSS3
- Web Open Font Formats
- DOM L2 and L3
- ECMAScript 5
- HTML5
- Scalable Vector Graphics (SVG)
- International Color Consortium (ICC) Color Profiles

This section provides an overview of the standards updates contained in Internet Explorer 9. For a more in-depth discussion, see the Internet Explorer 9 Developer Guide and the Internet Explorer Developer Center on MSDN. To see the new standards support in action, see the Internet Explorer Test Drive site.

## CSS3

Internet Explorer 9 has more support for CSS than any prior Microsoft browser. Building on the work that was done in Internet Explorer 8, where Internet Explorer became fully compliant with the CSS2.1 specification, Internet Explorer 9 adds support for many components of CSS3.

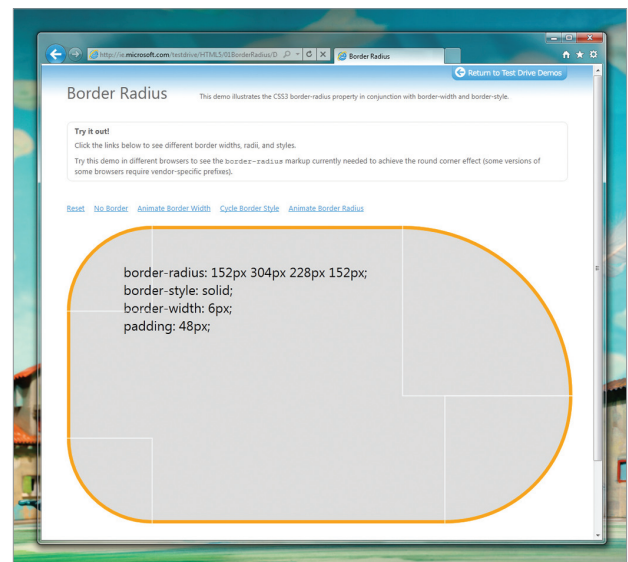
It is important to note that many CSS3 modules are still in the Working Draft or Last Call stages. Until they reach the Candidate Recommendation stage, they could change significantly. For more information, see the latest CSS3 draft modules.

The following list enumerates the CSS modules that have gained either full or partial support in Internet Explorer 9. The rest of this section describes some of the more noteworthy CSS additions in more detail. For more detail on any of the new CSS features, please see the Internet Explorer 9 Developer Guide and the Internet Explorer Developer Center on MSDN.

- CSS3 Backgrounds & Borders Module
- CSS3 Color Module
- CSS3 Fonts Module
- CSS3 Media Queries Module
- CSS3 Namespaces Module
- CSS3 Selectors Module
- CSS3 Values and Units Module
- CSSOM View Module

### CSS3 Backgrounds & Borders Module

Internet Explorer 9 adds support for one of the most requested CSS border features, the border-radius properties. Previously, web developers had to use complicated techniques involving multiple images or tables to create the appearance of rounded corners on layout boxes. The border-radius properties enable curved border corners by essentially replacing the hard corners with a quarter-ellipse and specifying the radii of each ellipse. You can see rounded corners in action on the Internet Explorer Test Drive (<http://ie.microsoft.com/testdrive/>—Internet Explorer 9 required to view).



*Border radius example*

Other notable enhancements from this module include new support for the background-clip, background-origin, and background-size properties, as well as support for the box-shadow property.

For more information, see the Color and Background CSS reference section on MSDN

## CSS3 Color Module

Internet Explorer 9 adds support for several new color models defined by the CSS3 Color Module, including new alpha (transparency)-enabled models. In addition, Internet Explorer 9 adds the CSS3 Color module's opacity property, which enables developers to control transparency at the element level. See an example of opacity in action on the Internet Explorer Test Drive site (Internet Explorer 9 required to view). Internet Explorer 9 also includes expanded support for the transparency property.

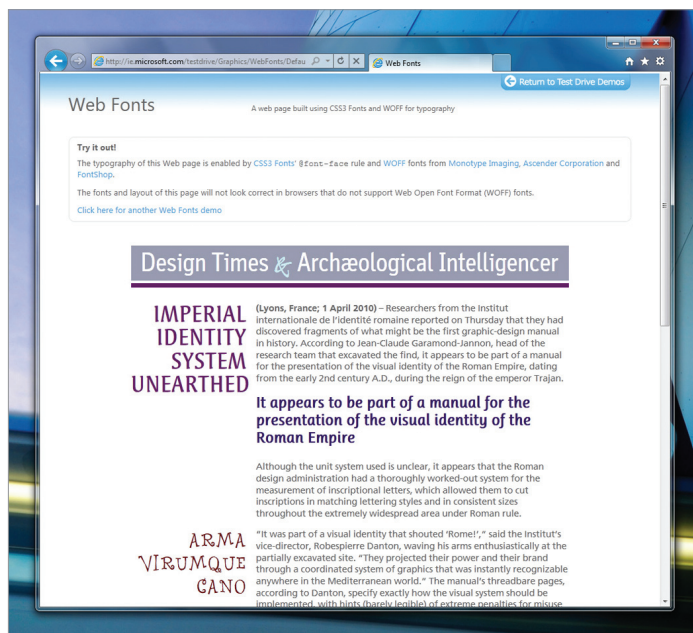
For more information, see the Color and Background CSS reference section on MSDN.

## CSS3 Fonts Module

Better typographic control has been a consistent feature of each new version of CSS. The CSS3 Fonts Module extends font support in CSS2.1 and redefines the behavior of certain features at a time when the lack of an interoperable Web font format frustrates many developers. Internet Explorer 9 enhances existing support for CSS fonts to provide full compliance with the CSS3 Fonts Module, including interoperable implementations of the @font-face rule, font-weight mapping, font-size mapping, and the font-stretch property.

Internet Explorer 9 also adds support for the Web Open Font Format (WOFF), which repackages spline font (sfnt)-based font files (TrueType, OpenType, and Open Font Format fonts) by compressing each table individually using a ZIP compression format. Raw fonts (that is, a font whose embedded permission bit is not set) are also supported.

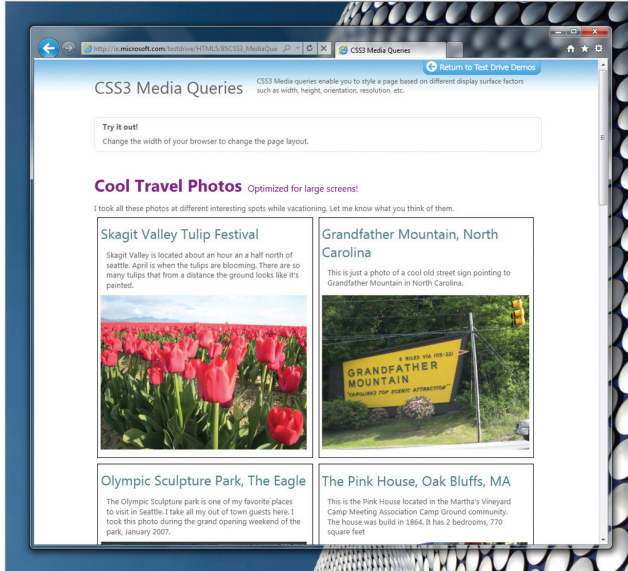
See an example of web fonts in Internet Explorer 9 on the Internet Explorer Test Drive site (Internet Explorer 9 required to view).



Web fonts example

## CSS3 Media Queries Module

The CSS3 Media Queries Module specifies methods to enable web developers to scope a style sheet to a set of precise device capabilities. For instance, a developer might want to design pages differently for users browsing on a mobile device (with a smaller screen, limited color palette, low resolution, and so on) versus a netbook (with a small screen, full color palette, high resolution, and so on) versus a standard computer (with a large screen, full color palette, high resolution, and so on). The full list of media properties supported by CSS3 media queries includes width, height, device-width, device-height, orientation, aspect-ratio, device-aspect-ratio, color, color-index, monochrome, and resolution.



CSS3 Media Queries in action

Internet Explorer 9 introduces support for media queries in CSS, HTML, XML, and XHTML. This enables developers to better customize their designs to their users' needs and devices. See an example of media queries in action on the Internet Explorer Test Drive site (Internet Explorer 9 required to view).

For more information, see the @media rule reference page on MSDN.

## CSS3 Namespaces Module

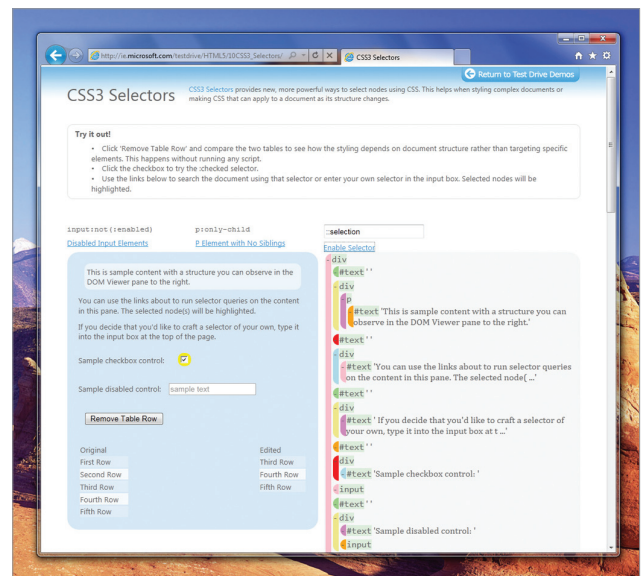
Internet Explorer 9 introduces support for using XML namespaces in CSS selectors. Selectors enable web developers to target style rules to one or more elements of a document. Namespaces declared via the @namespace at-rule (whether the default namespace or a custom namespace) extend selectors support to XML documents, including SVG embedded in XHTML.

For more information, see the CSS Namespaces reference section on MSDN.

## CSS3 Selectors Module

The CSS3 Selectors Module specifies several additions to CSS selector syntax, all of which are supported in Internet Explorer 9. The new selectors in Internet Explorer 9 enable web developers to more precisely target style rules to elements of a document. They include structural pseudo-classes, the :target pseudo-class, UI element states pseudo-classes, the negation pseudo-class, and the UI element fragments pseudo-element. See an example of CSS3 selectors in action on the Internet Explorer Test Drive site (Internet Explorer 9 required to view).

For more information, see the CSS Selectors reference section on MSDN.



CSS3 Selectors in action

## DOM L2 and L3

Internet Explorer 9 adds support for more of the Document Object Model Level 2 (DOM L2) and Level 3 (DOM L3), and improves support over existing implementations in Internet Explorer.

The following list enumerates the DOM specifications that have gained either full or partial support in Internet Explorer 9. The rest of this section describes some of the more noteworthy DOM additions in more detail. For more detail on any of the new DOM features, see the Internet Explorer 9 Developer Guide and the Internet Explorer Developer Center on MSDN.

- DOM Core (L2 and L3) and Views (L2)
- DOM Element Traversal
- DOM L2 and L3 Events
- DOM L2 HTML
- DOM L2 Style
- DOM L2 Traversal and Range
- Handling Whitespace

### DOM Core (L2 and L3) and Views (L2)

Internet Explorer 9 adds support for many new DOM L2 Core APIs. It also adds interoperable support for DOM namespaces, such as support for \*NS methods and namespace-related properties. Internet Explorer 9 also supports many of the most commonly used DOM L3 Core methods and properties, and fully supports both DOM L2 Views properties.

For more information, see the DOM Core and Views reference section on MSDN.

### DOM Element Traversal

The Element Traversal specification defines the ElementTraversal interface. This interface enables navigation via script of the elements in a DOM tree, such as element nodes in HTML, XML, or SVG documents. Internet Explorer 9 introduces support for the ElementTraversal interface and its five properties.

### DOM L2 and L3 Events

The DOM Events specifications (Level 2 and Level 3) describe the DOM event system, which enables registration of event handlers, describes the flow of events through a document tree, and defines contextual information for events.

The primary goal for the event system in Internet Explorer 9 is to align with the interoperable model specified by the W3C. This enables developers to move away from Internet Explorer's proprietary attachEvent model, which helps eliminate the need to write code for different browsers.

For more information, see the DOM Events reference section on MSDN.

## **DOM L2 HTML**

Internet Explorer 9 adds support for the DOM L2 HTML APIs that were not available in previous versions of Internet Explorer, including HTML5 APIs such as `getElementsByClassName` and `characterSet`. Internet Explorer 9 has improved the object model in tables, particularly with respect to DOM operations for adding or removing elements.

## **DOM L2 Style**

The DOM L2 Style specification defines APIs to programmatically access and change both the styles of individual elements and entire style sheets by removing or modifying rules. Previous versions of Internet Explorer were able to accomplish these tasks using proprietary methods; Internet Explorer 9 adds support for the standardized APIs defined in the DOM L2 Style specification. In addition, support has been added for standardized APIs that have no equivalent in Internet Explorer, such as the `getComputedStyle` method. See an example of the `getComputedStyle` method in action on the Internet Explorer Test Drive site (Internet Explorer 9 required to view).

For more information, see [DOM Style on MSDN](#).

## **DOM L2 Traversal and Range**

The DOM Range portion of the DOM L2 Traversal and Range specification defines a general way to select document content between a pair of boundary points. Boundary points are specified by a container (the parent element that contains the point) and an offset (the location in the container where the point lies). In conjunction with the HTML5 Selection interface, DOM Range capabilities enable functionality such as programmatically retrieving a range, selecting children, and deleting a selection. The Selection interface is discussed in the HTML5 Selection APIs section of this document.

Internet Explorer 9 supports all DOM L2 Range APIs, as well as all HTML5 Selection APIs, such as the already widely-used `setSelectionRange` method.

For more information, see [DOM Range on MSDN](#).

The DOM Traversal portion of the DOM L2 Traversal and Range specification defines a programmatic way of extracting information from the current document. Internet Explorer 9 supports both the two ways to traverse the DOM (`Nodeliterator` and `TreeWalker`), and the two ways to filter nodes (`whatToShow` and `NodeFilter`) that are defined in the W3C specification.

For more information, see [DOM Traversal on MSDN](#).

## **Handling whitespace**

Exposing whitespace in the DOM has been handled differently in Internet Explorer than in other browsers; the lack of interoperability in this area has been frustrating to web developers. In previous versions, Internet Explorer collapsed the whitespace that it encountered, and did not place it into text nodes in the DOM. In Internet Explorer 9, whitespace is preserved and placed into text nodes within the DOM, as expected. This behavior is consistent with other browsers.



## ECMAScript 5

Internet Explorer 9 introduces enhancements to the JavaScript language feature in addition to improved JavaScript performance. In December 2009, ECMA approved the Fifth Edition of ECMA-262 as the successor to the Third Edition (a Fourth Edition was never published), and that same year, Microsoft debuted elements of ECMAScript 5 (ES 5) support when native JSON support was added to Internet Explorer 8. Beyond JSON, though, ES 5 standardizes many significant enhancements to the JavaScript language.

There are many important ECMAScript 5 features implemented in Internet Explorer 9, including the following:

- New array methods
- Enhanced object model
- Other computational methods and functions

Internet Explorer 9 also corrects several issues present in the previous implementations of JavaScript in Internet Explorer. For more information, see the Internet Explorer Team Blog.

To see ECMAScript 5 support in action, go to the Internet Explorer Test Drive site.

## HTML5

Support for some features of the HTML5 Working Draft specification was introduced in Internet Explorer 8, including:

- DOM Storage, defined as part of the HTML5 Web Storage specification
- Ajax Navigation implemented via the `window.location.hash` property and the `onhashchange` event, both of which are defined in the History Traversal section of the HTML5 specification
- Cross-document messaging, implemented via the `postMessage` method and the `onmessage` event, which are both specified as part of the HTML5 Web Messaging module

Internet Explorer 9 builds on the work done on HTML5 compliance in Internet Explorer 8, and implements the following new features:

- HTML5 video and audio elements
- HTML5 canvas element
- HTML5 Selection APIs
- HTML Parsing Improvements
- Several new DOM APIs, as discussed in the DOM L2 HTML section of this document
- Scalable Vector Graphics (SVG), which is covered in its own section in this document

**Note:** It is important to remember that, as of this writing, the HTML5 specification is still in the Working Draft stage. Until it reaches the Candidate Recommendation stage, it could change significantly. For more information, see the latest HTML5 Working Draft.

## HTML5 video and audio elements

Two of the most anticipated HTML5 features now supported in Internet Explorer 9 are the new video and audio elements. The video and audio elements are both defined within the Embedded content section of the HTML5 specification, and are described without specifying a particular video format. Internet Explorer 9 supports playback of H.264-encoded video using the HTML5 video tag, plus VP8 video when a VP8 codec is installed on Windows.

Essentially, the video and audio elements enable embedding of video and audio content into an HTML page without the need for a plug-in. Web developers can also specify several attributes for both elements. For instance, consider the following markup:

```
<video width="400"  
  height="300"  
  src="video.avi"  
  poster="frame.png"  
  autoplay  
  controls  
  loop>
```

This content appears if the video tag or the codec is not supported.

```
</video>
```

In Internet Explorer 9, this will display, in an area that is 400×300 pixels (the width and height attributes), the image file "frame.png" while the video content is loaded (the poster attribute). The video file, "video.avi" (the src attribute), will start playing automatically upon page load (the autoplay attribute), and controls will be displayed for controlling the video (the controls attribute). When it finishes, the video will repeat (the loop attribute). If the video format is not supported, the text within the video element ("This content appears...") will be displayed instead. The video element also supports the preload element, which hints to the browser what the Web developer thinks will lead to the best user experience. See an example of the video element in action on the Internet Explorer Test Drive site (Internet Explorer 9 required to view).

Internet Explorer 9 also supports the video element with multiple sources, each of which is specified by the child element source. This can be useful when targeting multiple browsers or multiple file formats.

The audio element is defined similarly to the video element, but without the width, height, and poster attributes. See an example of the audio element in action on the Internet Explorer Test Drive site (Internet Explorer 9 required to view).

Internet Explorer 9 supports the following content formats:

Element name	Supported formats
video	MP4 container, h.264 video, all profiles; audio in AAC or MP3 format VP8 video, if you have the VP8 codec installed
audio	AAC or MP3 format

For more information, see [HTML5 video and audio on MSDN](#).

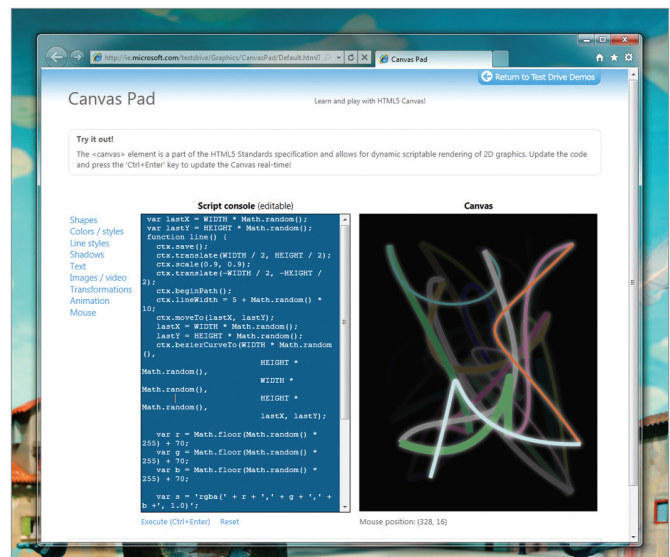
## HTML5 canvas element

Another anticipated HTML5 feature is the new canvas element, which is used in conjunction with the Canvas 2D API. The canvas element, as defined in the HTML5 specification, enables rendering of graphics on a resolution-dependent bitmap canvas. To draw on the canvas, “contexts” are used, such as the Canvas 2D context, specified in the W3C Canvas 2D API specification. Internet Explorer 9 introduces support for the canvas element, using the 2D Canvas drawing API as its only supported context. Like all of the graphics in Internet Explorer 9, canvas is hardware accelerated through Windows and the GPU.

Canvas is a way to program graphics on the web. The canvas tag is an “immediate mode” (drawing commands are immediately applied) two-dimensional drawing surface that web developers can use to deliver things like real-time graphs, animations, or interactive games without requiring a separate plug-in to be downloaded. Canvas, through APIs defined by the HTML Canvas 2D Context specification, enables drawing scenarios that include:

- rectangles
- lines
- fills
- arcs
- shadows
- Bézier curves
- quadratic curves
- images
- video

Web developers can use JavaScript to animate canvas drawings or make interactive experiences that can react to keyboard input, mouse clicks, or any browser event. For instance, this example on the Internet Explorer Test Drive site produces, with just a few lines of JavaScript, randomly placed and colored glowing lines.



Canvas Pad

## HTML5 Selection APIs

Internet Explorer 9 adds support for HTML5 text selection APIs. The Selection object represents a list of Range objects, which are enabled by the new support for DOM L2 Range in Internet Explorer 9. (The Range objects, as well as the concept of programmatic text selection, are discussed in the DOM L2 Traversal and Range section of this document.) The Selection object provides a much more robust way to select content than the existing proprietary Internet Explorer solution, document.selection.

## HTML parsing improvements

HTML parsing in Internet Explorer 9 has been improved to more closely align to behavior described in the HTML5 Draft Specification. Specifically, Internet Explorer 9 handles the following in a more predictable and interoperable way:

- **Parsing SVG in HTML.** Internet Explorer 9 supports SVG embedded directly in HTML. For more information on SVG, see Scalable Vector Graphics (SVG) in this document.
- **Parsing XHTML.** Internet Explorer 9 parses documents with a mime-type of application/xhtml+xml as XHTML.
- **Generic elements.** Prior versions of Internet Explorer treated generic elements, which are unknown HTML elements, which developers commonly use in lieu of div elements with CSS class names, in a noncompliant way. Internet Explorer simply collapsed and ignored them. Internet Explorer 9 handles these elements as expected, and is consistent with other major browsers.
- **Overlapping tags.** In Internet Explorer 8 and earlier versions, overlapping HTML tags are not handled as specified in the HTML5 specification. Often developers create script that is triggered specifically when certain HTML tags overlap, but Internet Explorer did not accurately parse them. Internet Explorer 9 parses overlapping tags as expected, and is consistent with other major browsers.
- **Parsing changes to script and style blocks.** Internet Explorer 9 passes text within either a script or style block to text nodes in the DOM. This technique is most often used to display source code on a page using script.

## Scalable Vector Graphics (SVG)

Support for Scalable Vector Graphics (SVG) has become one of the most requested features for implementation in Internet Explorer, and is a powerful way to add attention-grabbing visuals of any size to a website without the need for a plug-in or separate viewer.

With Internet Explorer 9, we are proud to introduce interoperable support for the SVG element feature set. The SVG support in Internet Explorer 9 is based on the SVG 1.1 (Second Edition) draft specification for desktop browsers. Like the new HTML5 media features, SVG in Internet Explorer 9 takes advantage of hardware-accelerated graphics.

For Internet Explorer 9, the following functionality is supported:

- SVG document structure, interactivity (scripting events), and styling (inline and through CSS)
- Presentation elements and their corresponding attributes and DOM interfaces, including:
  - basic shapes
  - filling, stroking, marker, and color
  - gradients and patterns
  - paths
  - text

SVG enables numerous developer scenarios—too many to describe in detail here. The list that follows contains just a few uses for this technology, all of which can now be implemented in Internet Explorer 9:

- Small static vector images for logos, list bullets (using the `list-style-image` CSS attribute), border images (using the `border-image` CSS attribute), or other small images where the `img` HTML tag would have been used previously. Such scenarios benefit from a smaller download size, richer static web graphics, high-quality printing, and finer detail with page zoom.
- Large static vector images for background images (using the `background-image` CSS attribute) or other large images where the `img` HTML tag would have been used previously. These scenarios also benefit from richer graphics and printing, and finer detail with page zoom.
- Complex high-fidelity drawings created in software such as Microsoft® Visio®, Adobe Illustrator, and CAD software. SVG support in Internet Explorer 9 negates the need for users to download a separate viewer.
- Interactive vector graphics such as those used in maps, diagrams, website user interfaces, and other vector-based interactive scenarios. These might have previously been experienced only with the use of a plug-in.
- Dynamically composed, interactive vector graphics such as charts and graphs that change according to user input. These also might have previously been experienced only with the use of a plug-in, but thanks to the data-driven visualization and user-initiated navigation, sorting, and data manipulation capabilities of SVG, such capabilities are available natively within Internet Explorer 9.

For a demonstration of SVG support in Internet Explorer 9, visit the [Internet Explorer Test Drive](#).

## Updated compatibility mode

Internet Explorer 8 introduced document compatibility modes, which enable developers to choose the specific rendering mode—Internet Explorer 7, Internet Explorer 8, and Internet Explorer 9—that Internet Explorer uses to display webpages. Internet Explorer 9 adds a new document mode, Internet Explorer 9 Standards Mode (“IE9 Document Mode”), which enables the fastest performance, scales to handle the demands of modern web applications, and implements the latest standards support. This updated Compatibility Mode provides developers with greater flexibility in application migration and upgrades.

Internet Explorer 9 runs in IE9 Document Mode by default, unless otherwise specified on the page or by the web server.



Internet Explorer 9 Beta  
Product Guide  
for IT Professionals







# Internet Explorer 9 Product Guide for IT Professionals

All of the investments in performance, navigation, service integration, security, and standards support in Windows® Internet Explorer® 9 will benefit customers who are using the browser at home or at work. A more secure browser provides a more secure workplace. A more efficient browser enables a more productive workforce.

However, IT departments also have unique security, customization, deployment, and management needs for their desktop computers. Internet Explorer 9 can be deployed as a standalone installation or slipstreamed into a Windows installation image, and Internet Explorer 9 has greater customization and management flexibility through group policies than other browsers.

Internet Explorer 9 also maintains our strong commitment to providing support to IT departments. As part of Windows, Internet Explorer is supported for the life of the operating system, with dedicated, enterprise-level hotfix and security responses. Even as we roll out new versions of the browser, we stand behind previous versions, giving businesses the predictability and consistency they need to plan deployments or business-critical technologies.

## All-around fast

Internet Explorer 9 is all around fast, with built-in developer tools that get sites up and running more quickly, faster browser launch and webpage load times, and one-click access to web applications directly from your taskbar. Additionally, Internet Explorer 9 is committed to fast performance through:

- Hardware-accelerated text, videos, and graphics
- F12 developer tools

## Clean, with a focus on your websites

Internet Explorer 9 puts the focus on the web applications you love with a clean look. Navigation is familiar because it works like navigation in the Windows desktop, so that web applications perform at their best. Internet Explorer 9 provides:

- **Clean design**
  - Clean browser interface
  - One-click navigation
  - Familiar Windows interface
  - Optimized controls and fewer interruptions
- **Rich experiences**
  - Graphically rich and immersive experiences
  - Windows 7 integration
- **Smarter address bar**
- **Search in the corporate environment**
- **Tear-off tabs and Aero® Snap tabs for side-by-side web browsing**

## The browser people can trust

For millions, Internet Explorer is the trusted way to the web because it has a robust set of built-in security, privacy, and reliability technologies that help keep you safer, and provide a virtually uninterrupted browsing experience. You can trust Internet Explorer 9 because of:

- |   |   |   |
|---|---|---|
| <ul style="list-style-type: none"><li>• <b>Built-in security</b><ul style="list-style-type: none"><li>- SmartScreen Filter</li><li>- Introducing SmartScreen download reputation</li><li>- SmartScreen URL filtering improvements</li><li>- Protection against emerging threats</li></ul></li></ul> | <ul style="list-style-type: none"><li>• <b>Reliability</b><ul style="list-style-type: none"><li>- Tab isolation, automative crash recovery, and hang recovery</li><li>- Compatibility View</li><li>- Support for modern standards</li></ul></li></ul> | <ul style="list-style-type: none"><li>• <b>Deployment and control</b><ul style="list-style-type: none"><li>- Internet Explorer Administration Kit</li><li>- Slipstream installation</li><li>- Robust Group Policy support</li><li>- Predictable updates</li></ul></li></ul> |
|---|---|---|

Read on for more detail about each of these areas, including feature descriptions, usage scenarios, and screenshots.

# All-around Fast

Windows Internet Explorer 9 is all-around fast with GPU-powered HTML5 that allows websites to take full advantage of the power of Windows-based computers. Line-of-business applications that you deliver through the web are fast and responsive—like the native applications on a computer.

Waiting for the browser to do something can be frustrating. Internet Explorer 9 is faster than Internet Explorer 8 in terms of startup, and new tab launch—and provides a variety of ways for you to quickly access the websites that you need and rely on. All of these combine to provide enhanced productivity for information workers.

## Hardware-accelerated text, videos, and graphics

New graphic capabilities and improved performance provide immersive and rich experiences in Internet Explorer 9. Hardware-accelerated text, video, and graphics mean that websites perform like applications installed directly on your Windows computer. High-definition videos are smooth, graphics are clearer and more responsive, colors are truer, and websites are more interactive. Websites and applications load faster and are more responsive with subsystem enhancements like the new JavaScript engine that utilizes the power of modern multi-core processors to make the web feel incredibly responsive. By taking advantage of powerful new graphics capabilities on the computer, Internet Explorer 9 provides a premium web experience on Windows.

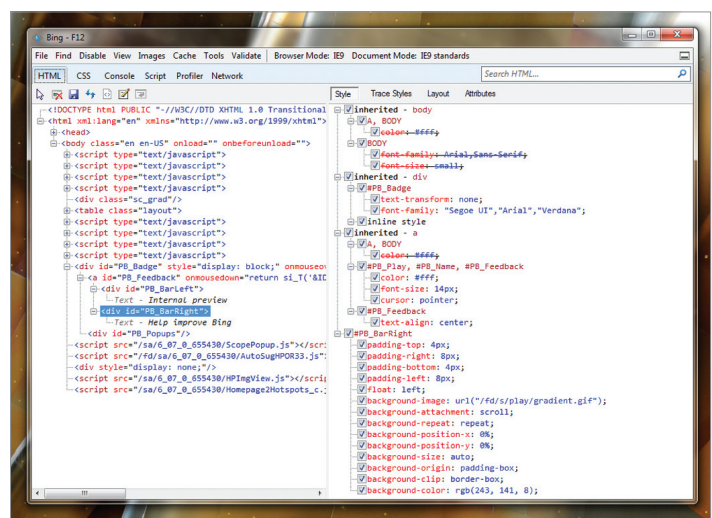
## F12 developer tools

Internet Explorer 9 developer tools provide built-in features that help developers to rapidly prototype, test, and debug webpages. Building on the tools provided in Internet Explorer 8, developer tools include new capabilities and improvements:

- A new tab for inspecting network traffic.
- Improved performance for working with large JavaScript files. For example, files that contain 70,000 lines of code or more.
- A user agent switching tool.

These tools help you to ensure that your applications work with the latest version of Internet Explorer.

**Web Timing API.** With the developer tools in Internet Explorer 9, developers can now measure even more aspects of website performance than in previous versions of Internet Explorer. However, they cannot measure the performance that you actually experience. To solve this problem, some sites develop their own libraries that try to measure



New F12 developer tools

live performance on webpages, but this can introduce overhead that actually slows down the pages for you. We believe that the W3C WebTiming specification—which, as of this writing, is in the “Working Draft” stage—is a good conceptual foundation for responsibly solving this problem. The WebTiming functionality can be accessed in Internet Explorer 9 using the `window.msPerformance` interface in the DOM. Developers can also enable script debugging in the Developer Tools, and then access the `window.msPerformance` object.

# Clean, With a Focus on Your Websites

Windows Internet Explorer 9 gives your users a clean experience that puts the focus on what they care about most on the web. A streamlined browser interface and seamless integration with Windows 7 desktop navigation allows you to pin your business critical websites and applications directly to the Windows taskbar and create customized Jump Lists that put common user tasks one click away.

## Clean design

Improvements to the user interface and navigation features provide more screen area for the websites and web applications that are important to your users.

### Clean browser interface

A streamlined browser frame puts the focus on the content in your websites and applications. This new look brings the webpages you are using to the front and highlights them, while the browser user interface plays a supporting role. The new browser layout is designed to provide just the controls that are needed to support essential navigation functionality (Back button, Forward button, an updated Address Bar, Home button, and Favorites) with a streamlined Tools menu and tabs into a single row of the user interface. By default, the Favorites Bar, Command Bar, Menu Bar and Status Bar are hidden which helps to elevate web content so your users can be more productive and focus their attention on the page, rather than the browser. Using group policy, users and corporations can turn on these additional bars to customize the frame to their needs.

### One-click navigation

The New Tab page has been revamped in Internet Explorer 9 to intelligently display the websites you visit most often and put them one click away, so that navigation is simple and easy. The New Tab page now displays tiles for your most commonly visited websites, as well as the default search provider and home page. New users can get started quickly, and returning users can get meaningful suggestions and information that helps them decide what to do next as they browse.

The New Tab page also enhances usability by providing links for the following:

- Reopen closed tabs
- Reopen last browsing session
- Start InPrivate® Browsing

Now in Internet Explorer 9, you can also access webpages from the Windows taskbar. You can drag a tab from Internet Explorer and pin it to the taskbar, making it available with just one click. Accessing frequently used websites has never been easier.

## **Familiar Windows interface**

Your workforce is already familiar and comfortable with the user interface in Internet Explorer. We have integrated much of what we learned about user-interface improvements with Windows 7, specifically about how to create a clean, simple experience that pulls the tasks and applications that people want to use to the forefront. The applications are close and easy to access, whether via the Windows taskbar or Jump Lists. It is clean and immersive; the application is at the forefront and nothing else. It is intuitively interactive; what you expect should happen actually happens. Users will find it easy to drag a tab and snap it to the side of the display as a way to compare two sites. You'll find there will be less training, less confusion, and less downtime associated with getting users familiar with the updated interface.

## **Optimized controls and fewer interruptions**

Navigation controls have been optimized based on what people use most and user notifications now appear in the Notification Bar at the bottom of the browser. These notifications are easy for users to understand and to take action upon.

In Internet Explorer 9, inline auto-complete anticipates what users are looking for and helps get them to their website quickly. Users can also type in familiar terms like "news" or "music" and not have to worry about trying to remember the full web address of the sites they visit. These improvements will make browsing easier and more efficient for administrators and the users they support.

Privacy is an important part of the Internet Explorer promise. For example, users control whether or not they receive search suggestions from a selected search provider as they type. By default, keystrokes are not sent to search providers and users can choose to turn on search suggestions.

## **Rich experiences**

Internet Explorer 9 provides rich experiences by supporting emerging graphics technologies and enabling new ways for you to experience websites using the latest Windows features and APIs.

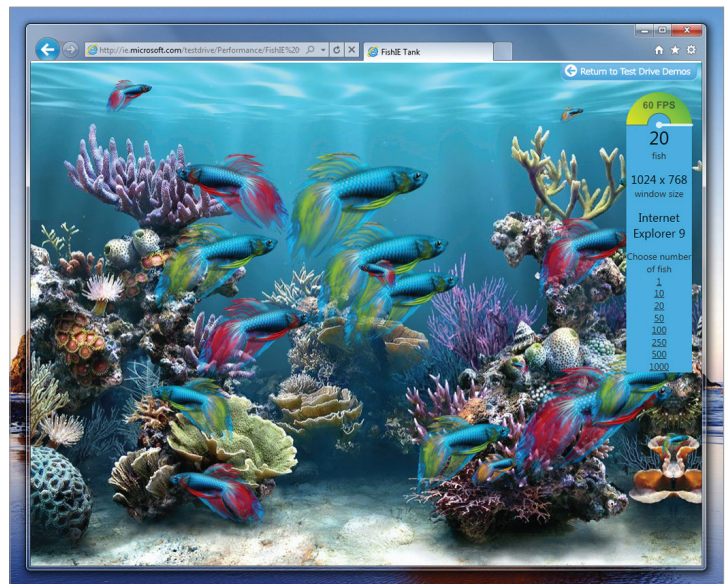
### **Graphically rich and immersive experiences**

Changes made in Internet Explorer 9 provide graphically rich and immersive experiences for websites by using the technologies listed in this section. The Internet Explorer Test Drive site is a great place to see demonstrations of the rich, immersive experiences that are available in Internet Explorer 9. This section points you to demos that showcase the updates made in Internet Explorer 9.



## Hardware-accelerated graphics.

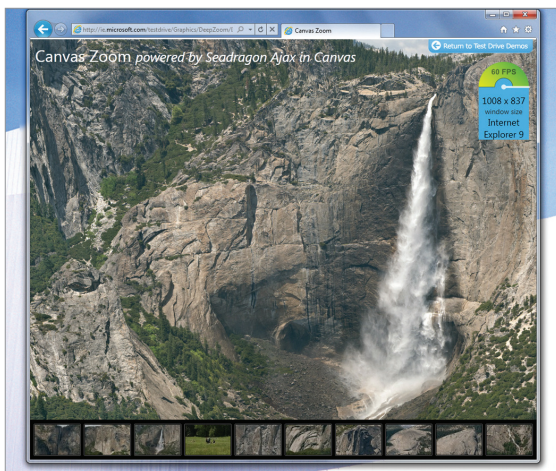
Hardware-accelerated graphics and the Direct2D® graphics infrastructure create crisp, speedy, accurate graphics. To see an example of these improvements, check out the FishIE Tank demo.



*Hardware canvas FishIE Tank*

**HTML5 video tag.** Support for the HTML5 video element enables smooth-streaming videos. To see an example, check out the IMDBVideo Panorama demo. For more information about HTML 5 improvements, see HTML5.

**HTML5 canvas tag.** Support for the HTML5 canvas element enables easy and dynamic graphics rendering while taking advantage of hardware acceleration through Windows and the graphics card. To see an example, check out the Canvas Zoom demo. For more information about the canvas element, see HTML5 canvas element.



*Canvas Zoom demo*

**SVG.** Support for Scalable Vector Graphics (SVG) in Internet Explorer 9 enables powerful, attention-grabbing visuals with incredible detail. All of this is available without having a separate download or plug-in. To see an example, check out the SVG Dice demo. For more information about SVG, see Scalable Vector Graphics (SVG).

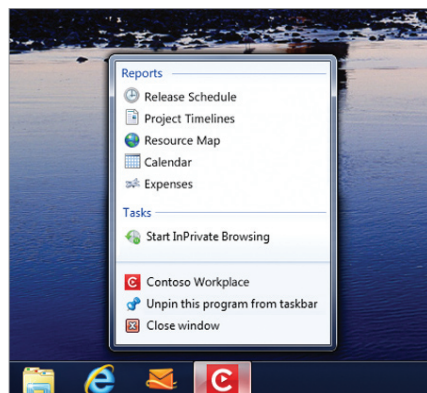
## Windows 7 integration

Internet Explorer 9 provides an integrated Windows navigation experience with websites that support Jump Lists and thumbnail preview controls.

Jump Lists take you directly to the websites that you use every day. Jump Lists are a quick and easy way to get to frequently visited websites without opening Internet Explorer first. To open the Internet Explorer 9 Jump List, you can right-click the Internet Explorer icon on the task bar. You'll see your pinned websites as well as the sites that you visit often. There's also access to start InPrivate Browsing, open new tabs, or close a browser window.

Any website that is pinned to the taskbar also has a Jump List. What you see in each of these Jump Lists depends on each website, but all of the Jump Lists include commands for InPrivate Browsing, opening the site, unpinning the site, and closing the browser window.

Pinned sites with Jump Lists provide you with faster access and richer controls with your internal corporate websites. These web applications feel more native as they are seamlessly integrated into the familiar Windows 7 experience.



*Pinning sites provides you with quicker access*



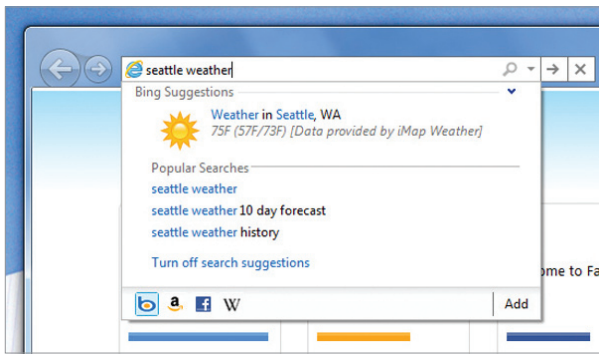
*Pinned website with customized controls*

Some websites that are pinned to the taskbar have additional controls. When you hover over a thumbnail for a website in the taskbar, you may see things like playback controls, similar to the controls in Windows 7 for Windows Media Player.

## Smarter address bar

In Internet Explorer 9, search and navigation functionality is integrated into the address bar. One Box gives you a single place to begin your online experience, whether you want to navigate to a specific URL, or start a search. In the new One Box, inline auto-complete anticipates what you are looking for and helps you get to websites quickly. You don't have to worry about having to remember the full web address. Instead, you can type in familiar terms like "news" or "music" and can quickly get to the sites you love. Search suggestions also help you find what you're looking for and get to their sites faster and with less typing.

To search the web, type your search query into the One Box and press the Enter key to get search results. If you type one word into One Box, Internet Explorer 9 determines whether the word is a valid URL. If it's valid, you go directly to the website. If it's not, you'll be sent to the search provider to see the search result page. The ability to switch between search providers or add new providers is integrated into the bottom of the **One Box** drop-down menu, making it easier for you to get results from different search providers quickly.



*One Box will perform a search as you type if you turn on search suggestions*

Your privacy is an important part of the Internet Explorer promise. With Internet Explorer 9, you are in control of what information, if any, gets shared with search providers. From the One Box drop-down menu, you are able to opt in to search suggestions or turn them off. If you decide to turn search suggestions on, the text you type will be sent to the select search provider as you type it. The search provider will suggest searches based on what is sent, one keystroke at a time, which can help you get results more rapidly. You are always in control, and can turn search suggestions on or off at any time.

## Search in the corporate environment

Internet Explorer 9 encourages a pattern to type for search terms in the address bar, where any text in the address bar that does not appear to be an URL is sent to the currently selected search provider. Internet Explorer 9 starts with the default search provider, but if you switch to a secondary provider, the search is performed with the selected provider.

For domain-joined machines, a single word is treated as a search term instead of as an intranet site. This allows Internet Explorer 9 users in the corporate environment to experience immediate search. In Internet Explorer 8, a single word was treated as an intranet site, and upon failure, the browser would resolve to the default search provider. This could take time and the result wasn't always predictable.

To explicitly go to an intranet site (such as <http://contoso/>) in Internet Explorer 9, both the trailing slash character ("contoso/") and <http://> prefix will trigger navigation. Internet Explorer 9 also verifies in the background to see if an intranet site is available in the single word scenario and offers matches through the Notification Bar. If you select the intranet site from the Notification Bar, Internet Explorer 9 remembers that the word is associated with an intranet site and the next time you type in the intranet site name, Internet Explorer 9 uses inline auto-complete to resolve to the intranet site address.

## Tear-off tabs and Aero Snap tabs for side-by-side web browsing

Web navigation and multitasking are made easier in Internet Explorer 9 with natural gestures like dragging and snapping tabs.

Users often need to use more than one website or page to accomplish a task. Tearing off a tab and using Windows Aero® Snap is a great way to show

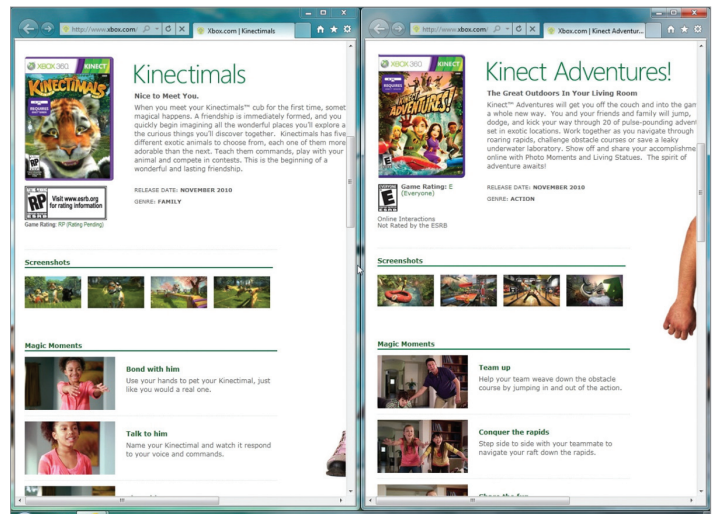


*Tear-off tabs*



two sites or pages side-by-side. Some examples include comparing products from different websites, watching a video while reading email, or looking at a map while reading an itinerary for a trip.

To tear off a tab, click a tab and drag it to edge of your screen. Content on the site is rendered continuously and videos continue to play when snapping a window in place, providing a fluid experience.



*Aero Snap with tear-off tabs*

# The Browser People Can Trust

Internet Explorer 9 is built with IT professionals in mind. Especially for the IT professional audience, we provide excellent protection for end users by default. We also support the latest standards for easier migration of line-of-business applications that are critical to your organization. Predictable browser updates that you can control further improve productivity.

## Built-in security

Internet Explorer 9 provides features that help keep your users and organization safe from online threats.

### SmartScreen Filter

In Internet Explorer 9, we've continued to heavily invest in the industry-leading SmartScreen® Filter and the backend reputation systems that power it. SmartScreen is a dynamic security intelligence and safety service designed to protect Internet Explorer users from phishing attacks and malicious software

The SmartScreen investments in Internet Explorer 9 can be broken down into two major areas:

1. Download reputation— Provides information about a downloaded program based on file and publisher reputation. Internet Explorer 9 is the only major browser providing integrated download reputation to help users make better trust decisions.
2. Improvements to SmartScreen URL reputation—Since the release of Internet Explorer 8, SmartScreen has blocked over 1.2 billion malware and phishing attacks. We've continued to invest heavily in this area for Internet Explorer 9.

### Introducing SmartScreen download reputation

SmartScreen download reputation is a groundbreaking browser feature that uses reputation data to remove unnecessary warnings for well-known files, and show more severe warnings when the download is a higher risk of

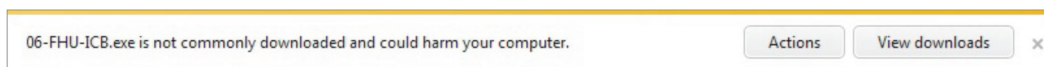
being malicious. Users today are conditioned to ignore the generic warnings that are shown for every download, such as: "This file type can harm your computer. Are you sure you want to run this file?" This same warning is presented whether the file is an extremely common program or a piece of malware created literally minutes ago. Other browsers leave it up to the user to decide if a program is safe to download and run from the internet. Internet Explorer 9 is the only browser that uses download reputation to the user to help make safety decisions.

### Why is this approach important?

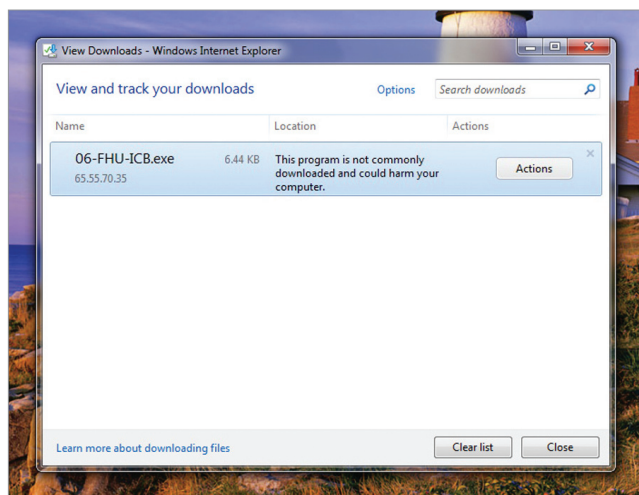
The primary reason is that consumers remain unprotected between the time of the initial attack and the time it is detected and blocked. Blocking after detection is still an important strategy, but for Internet Explorer 9 we wanted to turn the problem on its head. Download reputation is meant to fill the gap between attack and detection by warning users when a downloaded program is uncommon and higher risk.

### What is the user experience if a download doesn't have a positive reputation?

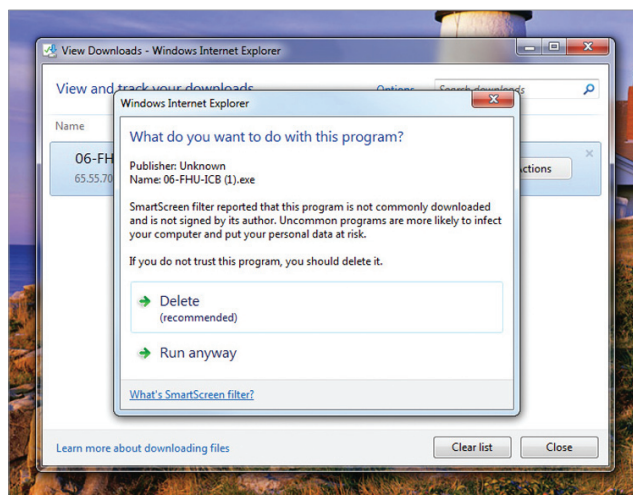
A downloaded program is first checked against our application reputation service. For the vast majority of downloads the downloaded program will have a positive reputation and the program can be downloaded and run without browser warnings. However, in the rare case that a download does not have a positive reputation, the user is warned and must choose an option from the **Actions** button found on the notification bar or in the Download Manager. This warning gives the user additional context on the risk of their activity and they can choose to proceed or not. We have several versions of the warning UI that we'll be testing through the beta period, one of which is shown below.



Uncommon download warning in notification bar



Uncommon download warning in Download Manager



Uncommon download warning Action Button with User Choices

### Why can't I see this functionality in the Beta release?

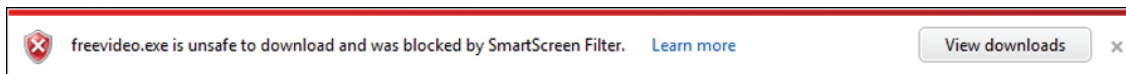
For a period of time after the beta release the feature will be running in silent mode while we finalize the data models. Our goal is to make this feature as useful and non-intrusive as possible so collecting real-world data about

its behavior and performance is critical prior to public release. When we've confirmed we have the desired data quality the feature will be enabled for all beta users with no code update required.

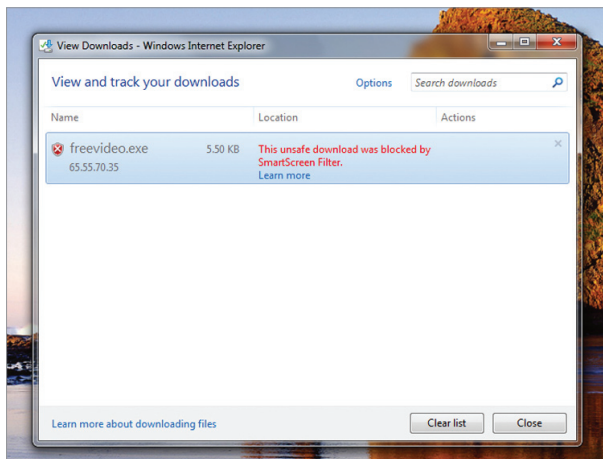
## SmartScreen URL filtering improvements

The SmartScreen URL filter continues to be a key user safety investment in Internet Explorer 9. Since the launch of Internet Explorer 8, SmartScreen has blocked over 1.2 billion malware and phishing attacks and continues to block between 3 and 5 million attacks each day. We are committed to continuously improving our intelligence systems and processes so we can continue to provide industry leading protection from phishing and malware. We've also made improvements to the SmartScreen block experience in two core scenarios to ensure users clearly understand the risks involved.

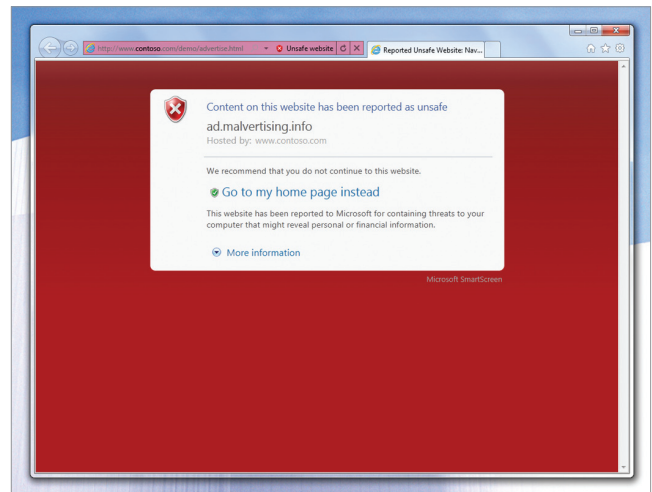
The new Download Manager blocks downloads from known malicious websites. When a malicious download URL is detected, a warning is shown both in the new notification bar and in the Download Manager. At this point, you can continue the download if desired, otherwise the download is cancelled and removed automatically.



*Blocked download in notification bar*



*Blocked download in Download Manager*



*Example of a malicious ad (malvertising.info) hosted by a benign website (www.contoso.com)*

The SmartScreen block experience has also been improved when protecting users from malicious content hosted on a benign page. This is most often caused by malicious advertising. For these scenarios the SmartScreen block page has been updated to be clear when hosted content is malicious rather than the hosting website.

## Protection against emerging threats

The cross-site scripting filter helps to keep you protected against emerging dangers on the web. As web technologies increase in complexity, so do the number of ways that malicious parties attempt to seize control of your computer and get to your personal data. Internet Explorer 9 improves safety by including technology to help protect you from three of these types of security attacks.



**Cross-Site Scripting (XSS) attacks.** The cross-site scripting filter helps protect against these kinds of attacks, which have become a very popular attack method to try to steal your data, deface webpages, or launch other types of attacks. XSS is a type of vulnerability in which one site attempts to use your computer to inject script code into another site that you're viewing. Internet Explorer 9 introduces improvements to our XSS filter that helps protect not only users but also sites from certain XSS attacks. For example, XSS filter now includes an opt-in Block feature that will allow Internet Explorer to block pages that it believes contain an XSS attack.

**Malicious website code.** Internet Explorer 9 uses Data-Execution Prevention, also referred to as No-execute or collectively as DEP/NX, which helps prevent malicious website code from running on your computer. For example, DEP/NX makes it much more difficult for a site to download a program file disguised as a picture or video and then secretly run it on your computer.

**Compromised security and privacy.** Internet Explorer 9 recognizes that many of today's websites need to combine ("mash-up") information from more than one source to offer innovative and useful experiences; however, these combinations can compromise security and privacy. Web developers can make cross-domain requests (XDR) and send messages via cross-document messaging (XDM) in a way that better safeguards private data.

## Reliability

Internet Explorer 9 provides technologies that keep users browsing, display webpages correctly, and make it easier for developers to use the same markup across multiple browsers.

### Tab isolation, automatic crash recovery, and hang recovery

Building on the work we did in Internet Explorer 8, reliability features like tab isolation and automatic crash recovery keep you browsing. Website crashes are isolated to individual tabs, not entire browser windows. If a site crashes in one tab, the rest of the browsing session isn't interrupted. You can keep browsing, undisturbed. After the problem is identified, Internet Explorer automatically recovers the tab. If one or more of the tabs close or crash unexpectedly, they are automatically reloaded, and you are returned to the sites you were on before the crash. Internet Explorer 9 also includes new support for hang recovery, which isolates the impact of a hung tab to the individual tab, so that other tabs and the overall browser are not impacted. Often a website hangs—not your browser. While a tab is hung, you cannot interact with that tab. Hang recovery means you will be able to continue browsing on other tabs. This new feature compliments tab isolation and automatic crash recovery.

We made the notification messages clearer in Internet Explorer 9 to help users better understand what to do when problems arise. For example, if a website causes the browser to stop responding, a message is shown in the Notification Bar that says the website is not responding, rather than saying Internet Explorer is not responding. Users are able to better understand what the problem is, and what actions, if any, they need to take to address the issue.

### Compatibility View

Some Web sites that are designed for older browsers may not display correctly in Internet Explorer 9 which, by default, renders content in the most standards-compliant way possible. You can feel good that your favorite websites

will run in the newest version of Internet Explorer. Working with the top sites in the world, we test to see how they run on Internet Explorer 9.

When Internet Explorer detects a website that has not specified its desired display mode, the Compatibility View button appears next to the Refresh button on the Address Bar. Pressing the Compatibility View button causes Internet Explorer to switch to a legacy document mode. The state of the button is saved for that webpage, eliminating the need to press it again when you return to the same page at a later time. You can choose to receive a list of sites best viewed in Compatibility View mode. When navigating to a site on the list, Internet Explorer 9 automatically displays the site in Compatibility View mode, without requiring you to press the Compatibility View button.



*Compatibility View button*

Compatibility View mode and the Compatibility View List were introduced with Internet Explorer 8. For Internet Explorer 9, we have made improvements that will make it much easier, especially for IT Professionals, to work with the Compatibility View List. The list will be available for download as a single XML file.

## Support for modern standards

Internet Explorer 9 introduces support for many of the latest web development standards. Developers can count on a standards implementation that both supports responsible industry standards bodies and won't change overnight. We know developers don't want to rewrite and test their websites again and again; responsible standards adoption is a good way to enable developers to create sites and applications that use the same markup for all browsers.

- Cascading Style Sheets, Level 3 (CSS3)
- Document Object Model (DOM) Levels 2 and 3
- HTML5
- Scalable Vector Graphics (SVG)
- International Color Consortium (ICC) Color Profiles

Through active participation in standards development in the CSS3 and SVG working groups, co-chairing the HTML5 working group, and leading the HTML5 Testing Task Force, we are actively working to bring modern web standards to the web. Standards consistency is a top priority for Microsoft, as we create and submit more test cases to the W3C than any other browser vendor. This helps to ensure that as browsers implement modern web standards and as developers write to them, they do so consistently. For enterprise customers this means fewer concerns over Web application compatibility, when these web applications are written with the latest web standards.

# Deployment and control

IT Professionals who manage desktop software for their organizations also have unique customization, deployment, management and security needs. Internet Explorer 9 is the only browser that, out-of-the-box, provides many of the capabilities needed by IT Professionals.

## Internet Explorer Administration Kit

Internet Explorer 9 can be deployed in a standalone manner or as part of the operating system, and offers improved customization and management capabilities through the use of Group Policy and the Internet Explorer Administration Kit 9 (IEAK 9). The ability to slipstream security updates into the desktop image, and new capabilities to manage user settings post-deployment can also help improve security and protect corporate information. With IEAK, Internet Explorer 9 can be installed as a standalone program through a custom Internet Explorer package (including a Windows installer file) and deployed through a distribution service, such as Active Directory®, Windows Server® Update Services (WSUS), and Microsoft® System Center Configuration Manager 2007. The IEAK provides you with all the tools and documentation you'll need.

System administrators can choose to deploy:

- The full Internet Explorer package (including Internet Explorer 9, customizations, and the Windows installer file)
- A configuration-only package (including customizations and the Windows installer file)
- A CD package (including CD auto-run, Internet Explorer 9, and customizations)

IT departments and original equipment manufacturers (OEMs) can customize their versions of Internet Explorer 9—including the home page, Favorites, search provider, Feeds, Accelerators, and Web Slices—by adding Internet Explorer 9 customization setting to the Unattend.xml file that Windows uses for unattended setup.

IT departments can use the Internet Explorer Administration Kit (IEAK) to configure Internet Explorer 9 settings for deployments. There are three licensing modes for the IEAK: Independent Content Provider (ICP), Independent Service Provider (ISP), and Corporate, to ensure there is a version that aligns with an IT department's specific customization needs.

IT Professionals can use the IEAK to create custom, branded versions of Internet Explorer 9 that can be delivered as standalone packages or with other software or services, without having to install an operating system at the same time. You can update these custom versions without having to reinstall Internet Explorer 9.

**Note:** IEAK 9 is not currently available.

## Slipstream installation

Slipstreaming is the process of integrating Internet Explorer 9 into a Windows installation image. System administrators can now create a Windows image that includes Internet Explorer 9, so that computers throughout the organization get a Windows installation that includes Internet Explorer 9 without any post-installation work required. Internet Explorer 9 uses the Windows Vista®/Windows 7 CBS (Component Based Servicing ) install method, meaning that Internet Explorer 9 slipstreaming is supported on both versions of Windows.

The Windows Automated Installation Kit (Windows AIK) has all the tools and documentation that are required for slipstream installation.

## **Robust Group Policy support**

System administrators can use Group Policy to centrally change and manage computer and user settings for existing Internet Explorer 9 deployments. These are settings that users cannot change. Examples include the ability to disable the SmartScreen Filter, delete browsing history, change policies for security zones, add or delete sites in a security zone, or access the Security tab in the Internet Options dialog box.

New features in Internet Explorer 9, such as changes to add-on management, will be configurable using Group Policy. Internet Explorer 9 installs an ADMX/ADML file (an XML version of the ADM files from previous operating system) as part of the full package, which allows system administrators to access the full range of Internet Explorer 9 policy settings and apply them within their organization through the use of Group Policy objects. Internet Explorer 9 has a number of additional Group Policy enhancements to simplify deployment, configuration, and customization, such as:

- Disable add-on performance notifications
- Enable newly installed add-ons automatically
- Prevent configuration of search from the address bar
- Prevent deletion of download history

## **Predictable updates**

Microsoft tries to provide a predictable update schedule to ensure that we are supporting released applications. However, because you often need to ensure that updates happen on your schedule, the Blocker toolkit allows you to postpone updates and install them at a time convenient for you and your user base. Many enterprise administrators will want to control how and when Internet Explorer 9 is deployed to their organization through Automatic Updates, to give them an opportunity to test their applications for compatibility. We provide a Blocker toolkit at each release of Internet Explorer. This toolkit allows IT administrators to control how Internet Explorer 9 is deployed in their organization.



# Appendix

The background is a solid blue color with a subtle gradient. On the right side, there is a vertical, glowing light streak that tapers towards the top, resembling a beam of light or a stylized flame. The streak has a bright white core that fades into a soft blue glow.







# Appendix

The first table in this appendix compares selected features and capabilities that are available in Windows® Internet Explorer® 7, Internet Explorer 8, and Internet Explorer 9. The second table compares select features and capabilities of Mozilla Firefox 4 beta, Google Chrome 6.0 beta, and Internet Explorer 9 Beta. This appendix also includes a glossary of key terms and feature descriptions.

## Internet Explorer compared to other browsers

The following tables compare the features and capabilities of Firefox 4.0 beta, Google Chrome 6.0 beta, and Windows Internet Explorer 9 Beta.

**Key:**  Quarter  Half  Full **A** With add-on

Performance	Internet Explorer 9 Beta	Chrome 6.0.472.55	Firefox 4.0b5
Fast startup and shutdown	●	●	●
Popular websites load quickly	●	●	●
Fully hardware-accelerated HTML5 for tomorrow's rich web experiences	●	—	◐
Competitive on popular JavaScript performance micro-benchmarks like WebKit SunSpider	●	●	●
JavaScript engine that both interprets and compiles code for better performance	●	—	●
JavaScript compiled in the background on secondary core	●	—	—
View and manage add-on performance	●	—	—
Automatic notification of add-ons that slow browser performance	●	—	—

Key:  Quarter  Half  Full **A** With add-on

Security and Privacy	Internet Explorer 9 Beta	Chrome 6.0.472.55	Firefox 4.0b5
Pop-up blocker	●	●	●
Protection from phishing attacks	●*	◐*	●*
Protection from socially engineered malware	●**	◐**	◐**
Protection from Cross-Site Scripting Type-1 Reflection Attacks	●	●	<b>A</b>
Sandboxed mode to limit impact of rogue add-ons (Windows Vista and later)	●	●	●
Support for DEP / NX	●	●	●
Delete browsing history (with granular control over cookies, passwords, and so on)	●	●	●
Privacy mode to browse without leaving any data on the PC	●	●	●
Control over what browsing activity that third-party websites can track	●	—	<b>A</b>
Highlight domain names in the Address Bar to help alert you to malicious websites	●	●	—

\* Based on NSS Labs report testing the catch rate of the phishing and malware services behind each major browser (Chrome 26 percent, Firefox 80 percent, Internet Explorer 83 percent).

\*\* Based on NSS Labs report testing the catch rate of the phishing and malware services behind each major browser (Internet Explorer 85 percent, Firefox 29 percent, Chrome 17 percent).

Interoperability, Standards Support, and Compatibility	Internet Explorer 9 Beta	Chrome 6.0.472.55	Firefox 4.0b5
Quirks mode for very old websites	●	●	●
Support for standards commonly used today (HTML 4.01, CSS 2.1)	●	●	●
Support for next generation standards like HTML5, CSS3, and ECMAScript 5	●	●	●
Compatibility mode for older sites	●	—	—
Comprehensive developer tools built into the browser	●	●	<b>A</b>

Key:  Quarter  Half  Full **A** With add-on

Reliability	Internet Explorer 9 Beta	Chrome 6.0.472.55	Firefox 4.0b5
Notifications for new versions of add-ons	—	—	●
Tabs isolated into separate process to limit impact of system failure (crash)	●	●	●
Automatic recovery of tabs that stop responding	●	●	●
Tab recovery for when websites time out	●	—	—

User Experience	Internet Explorer 9 Beta	Chrome 6.0.472.55	Firefox 4.0b5
Simplified browsing experience that has fewer controls and increased web page viewing area	●	●	●
Site-centric user experience that puts the focus on your sites	●	—	—
Rich tab functionality (color coding, grouping, tear off tabs, Aero Snap)	●	◐*	●
New Tab page includes common tasks and your favorite sites	●	●	—
Rich address bar (suggest sites from favorites and history, visual results)	●	◐**	◐++
Combined search and address bar with user ability to opt-in to send text to search providers as you type	●	◐***	—
Easily change search provider from search box	●	—	●
Quick access to common services like mapping	● <sup>#</sup>	◐****	<b>A</b>
Support for site pinning in Windows 7	●	◐	—
Support for jump lists and thumbnail preview for the browser on Windows 7	●	●	●
Support for jump lists and thumbnail preview for pinned sites on Windows 7	●	—	—
Non-intrusive notifications	●	●	●

Key:  Quarter  Half  Full  With add-on

User Experience <i>(continued)</i>	Internet Explorer 9 Beta	Chrome 6.0.472.55	Firefox 4.0b5
Download manager	●	●	●
Password manager	▀ ##	●	●
Spell checker	A	●	●
Form auto-fill	◐ ###	●	A+++
Sync favorites, themes and settings	A ▀ ####	●	●
Re-open tabs that were accidentally closed	●	●	—
Save open sites when you exit the browser	—	●	●

# Through Accelerators

## Saves individual passwords but can only delete all passwords

### Auto-fills on a field by field basis rather than a complete form, Bing Bar add-in supports filling complete forms

#### Windows Live Sync enables synchronizing of favorites

\* Grouping, tear-off tabs and Aero Snap supported, video frame does not update during tear action

\*\* No visual results

\*\*\* Default configuration sends text to search provider as you type

\*\*\*\* Only search

+ Supports grouping and tear-off tabs out of the box but requires add-ons for color coding. No Aero-snap support

++ No visual results

+++ Add-in not currently supported for Firefox 4.0b5

## Comparing versions of Internet Explorer 9 Beta

The following tables compare selected features and capabilities in Windows Internet Explorer 7, Internet Explorer 8, and Internet Explorer 9 Beta.

Performance	Internet Explorer 7	Internet Explorer 8	Internet Explorer 9 Beta
Fast startup and shutdown	—	—	●
Popular websites load quickly	—	◐	●
Fully hardware-accelerated HTML5 for tomorrow's rich web experiences	—	—	●
Competitive on popular JavaScript performance micro-benchmarks like WebKit SunSpider	—	—	●
JavaScript engine that both interprets and compiles code for better performance	—	—	●
JavaScript compiled in the background on secondary core	—	—	●
View and manage add-on performance	—	●	●
Automatic notification of add-ons that slow down browser performance	—	—	●



Key:  Quarter  Half  Full  With add-on

<b>Security and Privacy</b>	<b>Internet Explorer 7</b>	<b>Internet Explorer 8</b>	<b>Internet Explorer 9 Beta</b>
Pop-up blocker	●	●	●
Protection from phishing attacks	●	●	●
Protection from socially engineered malware	—	●	●
Protection from Cross-Site Scripting Type-1 Reflection Attacks	—	●	●
Sandboxed mode to limit impact of rogue add-ins (Windows Vista and later)	●	●	●
Support for DEP / NX	—	●	●
Delete browsing history (with granular control over cookies, passwords, and so on)	●	●	●
Privacy mode to browse without leaving any data on the PC	—	●	●
Control over which third-party websites can track browsing activity	—	●	●
Highlight domain names in the address bar to help alert you to deceptive websites	—	●	●

<b>Interoperability, Standards Support, and Compatibility</b>	<b>Internet Explorer 7</b>	<b>Internet Explorer 8</b>	<b>Internet Explorer 9 Beta</b>
Quirks mode for very old websites	●	●	●
Support for standards commonly used today (HTML 4.01, CSS 2.1)	◐	●	●
Support for next generation standards like HTML5, CSS3, and ECMAScript 5	—	◑	●
Compatibility mode for older sites	—	●	●
Comprehensive developer tools built into the browser	—	◐	●

<b>Reliability</b>	<b>Internet Explorer 7</b>	<b>Internet Explorer 8</b>	<b>Internet Explorer 9 Beta</b>
Tabs isolated into separate processes to limit the impact system failure (crash)	—	●	●
Automatic recovery of tabs that have stopped responding	—	●	●
Tab recovery for when websites time out	—	—	●

Key:  Quarter  Half  Full **A** With add-on

User Experience	Internet Explorer 7	Internet Explorer 8	Internet Explorer 9 Beta
Simplified browsing experience with fewer controls and increased web page viewing area	—	—	●
Site-centric user experience that puts the focus on your sites	—	—	●
Rich tab functionality (color coding, grouping, tear off tabs, Aero Snap)	—	◐	●
New tab page includes common tasks and your favorite sites	—	◐	●
Rich address bar (suggest sites from favorites and history, visual results)	—	◐	●
Combined search and address bar that enables the user to send text to search providers as you type	—	—	●
Easily change search provider from Search box	●	●	●
Quick access to common services like mapping	—	●*	●*
Support for site pinning in Windows 7	—	—	●
Support for jump lists and thumbnail preview for the browser on Windows 7	—	●	●
Support for jump lists and thumbnail preview for pinned sites on Windows 7	—	—	●
Non-intrusive notifications	—	—	●
Download manager	—	—	●
Password manager	◐	◐	◐
Spell Checker	<b>A</b>	<b>A</b>	<b>A</b>
Form auto-fill	◐**	◐**	◐**
Sync favorites, themes and settings	<b>A</b> ◐***	<b>A</b> ◐***	<b>A</b> ◐***
Re-open accidentally closed tabs	—	●	●

\* Through Accelerators

\*\* Auto-fills on a field by field basis rather than a complete form, Bing Bar add-on supports filling complete forms

\*\*\* Windows Live Sync enables synchronizing of favorites

## Feature glossary

<b>Windows Internet Explorer 9 is all-around fast.</b>	
Hardware-accelerated graphics	For Internet Explorer 9, rendering of graphics, text, and video has been moved from the CPU to the graphics card.
New DOM	The newly optimized document-object model (DOM) in Internet Explorer 9 provides dramatic speed improvements by interacting more efficiently with the new JavaScript engine.
New JavaScript engine	Chakra, the new JavaScript engine, interprets, compiles, and executes code in parallel by taking advantage of multiple CPU cores through Windows and the computer's hardware.
F12 Developer tools	Internet Explorer 9 provides built-in developer tools, which aid developers in rapid prototyping, testing, and debugging web-pages by enabling developers to test changes to their source code from within the browser itself before then implementing the changes to their pages on the back end. New to F12 Developer Tools in Internet Explorer 9 are a user-agent switching tool, a network traffic inspector, an improved JavaScript profiler, and integrated support for new web standards introduced with Internet Explorer 9.

<b>Clean, with a focus on your websites.</b>	
Clear and direct browser user interface	The new browser interface puts the focus the content of your websites and applications by providing increased viewing area. By default, controls essential to browsing are in the browser frame. These are the controls that users have said that they wanted and used most.
Notification Bar	All notifications now appear in the Notification Bar at the bottom of the browser. Messages in the Notification Bar are clearer and do a better job explaining to the user what they need to know.
One Box	Search functionality and the Address bar have been incorporated into a new feature called One Box. Now, users have one place where they can: navigate to a site, search for a site, switch between search providers, or access browsing history, Favorites, or suggestions from search providers.
Jump Lists	Jump Lists are a quick way to view frequently visited websites without first opening your browser. Users can access Jump Lists by right-clicking on the Internet Explorer 9 icon on the Windows taskbar.
Windows Aero® Snap	Windows Aero Snap provides a way to view two webpages side by side.

<b>Clean, with a focus on your websites</b> <i>(continued)</i> .	
Pinned Sites	With Pinned Sites, users' favorite websites can be accessed directly from the Windows taskbar without having to first open the browser. Users can create a pinned site by dragging a browser tab to the taskbar.
Thumbnail preview controls	Thumbnail preview controls are available on the Windows 7 taskbar and provide access to sites that are on the Internet Explorer 9 Jump List, or sites that have been pinned to the taskbar.
Icon overlays	Icon overlays are available on Windows 7 taskbar for pinned sites, and provide an indication of personalized web site specific status such as number of new messages.
New tab page	The New Tab page displays tiles for the sites that users visit more frequently. From the New Tab page, users can also reopen closed tabs, reopen their last browsing session, and start an InPrivate Browsing session.
Tear-off tabs	Tear off tabs allow users to easily look at two web sites side by side in Windows 7 through Windows Aero Snap. To tear off a tab, users click a tab and drag it to the edge of their screen.
Address Bar Top Result	Address Bar Top Result helps users who have a hard time remembering the web address for common websites by taking them directly to the top search result of their search at a search engine, without first displaying the search results page.

<b>The browser that people can trust to feel confident and in control.</b>	
Download Manager	Internet Explorer 9 provides an integrated Download Manager that includes a streamlined user interface and provides security for downloaded content.
Hang Recovery	New in Internet Explorer 9, this feature isolates the impact of a non-responsive tab to the individual tab, so that other tabs and the overall browser are not impacted.
Add-on Performance Advisor	Add-on Performance Advisor notifies users when add-ons are slowing down their browsing session.

<b>The browser that people can trust to feel confident and in control</b> <i>(continued)</i> .	
Compatibility Mode	When Internet Explorer 9 detects a website that has not specified its desired display mode, the Compatibility View button appears next to the Refresh button on the Address Bar. Pressing the Compatibility View button causes Internet Explorer 9 to switch to a legacy document mode.
Automatic Updates	Users can choose to have important updates installed automatically, once they are made available. Automatically installed updates can include security updates, critical updates, definition updates, update rollups, and service packs through Windows Update.
Group Policy support	For IT Professionals, Internet Explorer 9 continues to provide excellent Group Policy support. There are nearly 1500 Group Policy settings, including new settings to support Internet Explorer 9 features

<b>Internet Explorer 9 has HTML5 at the center, allowing developers to use the same markup across browsers.</b>	
HTML5	Internet Explorer 9 builds on the work done to implement HTML5 features in Internet Explorer 8, and adds several compelling features, such as support for video, audio, and canvas elements.
DOM Level 2 and Level 3	Internet Explorer 9 adds support for more of the Document Object Model Level 2 (DOM L2) and Level 3 (DOM L3), and improves DOM L2 support over existing implementations.
SVG	Support for scalable vector graphics (SVG) in Internet Explorer 9 enables powerful, attention-grabbing visuals with incredible detail, all without the need for a separate download or plug-in. Like the new HTML5 media features, SVG in Internet Explorer 9 takes advantage of hardware-accelerated graphics.
CSS3	Internet Explorer 9 adds support for many components of CSS3, enabling even more flexibility and functionality for web designers and developers. Internet Explorer 9 introduces features from several CSS3 modules, including the Backgrounds & Borders Module, Color Module, Fonts Module, Media Queries Module, Namespaces Module, Selectors Module, and the Values and Units Module.
ECMAScript 5	The JavaScript implementation in Internet Explorer 9 has been enhanced with many features defined by the latest edition of the ECMAScript standard. New ECMAScript 5 features help standardize many significant improvements to the JavaScript language.





