



Future Foundation: A More Secure, Stable, and Reliable Browser to Power Enterprise Productivity

The Web browser is now a strategic part of the information technology infrastructure. It is deployed as the universal front end to enterprise applications—finance, human resources, manufacturing, and supply chain, among other functions. In many cases, the browser is the gateway to software developed in-house, internal company portals, and dashboards. The browser is also the key conduit for external portals that employees use to interact with clients, suppliers, and business partners.

To be a successful front end for these enterprise applications, a browser needs to be highly secure, reliable, widely compatible, and easy to deploy and manage. It also needs a robust feature set. This white paper will examine why browsers are so central to the enterprise, dive into the most important browser features and components, detail the ways in which Internet Explorer 8 has been designed to be enterprise-ready, and provide insight from leading industry experts.

This white paper is written for senior business managers and executives responsible for enterprise applications, in addition to IT implementers and decision-makers.

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Executive Summary

The Web browser is no longer an isolated application used solely to access the Internet. Instead, it is a strategic part of the information technology (IT) infrastructure and a universal front end to enterprise-level applications, software developed in-house, internal company portals, dashboards, and external portals for interacting with clients, suppliers, and business partners.

To accomplish all of these roles, a browser needs to be enterprise-ready: Highly secure, reliable, widely compatible with existing applications, easy to deploy and manage, and with a robust feature set that an enterprise setting requires. In this white paper, we will examine why browsers are so central to the enterprise, dive into the most important browser features and components, detail the ways in which Internet browser Microsoft® Windows® Internet Explorer® 8 has been designed to be enterprise-ready, and provide insight from leading industry experts.

Why Browsers Are Central to the Enterprise

The days of desktop-based and client-based applications dominating the enterprise are behind us. Increasingly, enterprise-level applications do not run locally as clients; rather, they are accessed via a Web browser. Financial, supply chain, manufacturing, and customer relationship management (CRM) applications, in addition to Web-hosted applications and many applications developed in-house, are written to be accessed over a network or the Internet via a browser. This access makes deploying and updating enterprise-level applications easier than in the past. Instead of updating hundreds or thousands of clients, the IT staff need only update the application on servers to have the latest version immediately available to everyone in the enterprise via a browser.

Browsers are the primary interface for individual applications. They are also used to work with Web portals and dashboards. These platforms give employees a way to communicate with clients and partners, and they provide access to internal information that is stored outside of traditional enterprise applications.

“The browser is now the primary user experience environment for most people interacting with information and other people,” explains Peter O’Kelly, principal analyst at O’Kelly Consulting. “Enterprise users generally spend their days in a combination of the browser and e-mail clients, and some e-mail clients have moved to the browser.”

In short, Web browsers are the universal front end to enterprise-level applications. They are the

FIGURE 1 Security Toolbox

Security Feature	Benefit/Protects from...
SmartScreen Filter	Improved protection against phishing attacks, including new features to protect against downloading malware.
Cross-site scripting filter	Locks down the browser against cross-site scripting attacks, which can perform a variety of malicious actions, including monitoring someone’s keystrokes.
Safer ActiveX control and management	More granular management of ActiveX controls, including where, when, and how they load and which users are allowed to load them.
Data execution prevention	Helps prevent malicious code from running on Web pages or in Web-based applications and then infecting PCs.

Source: Microsoft Corporation

user interface for packaged applications. Enterprises are using browsers to provide their employees with access to custom applications—including performance dashboards and private Web sites, typically called portals, for their clients and suppliers.

For example, human resources portals with self-service functionality are standard in many businesses. These internal portals enable employees to update their records or change their benefit plans. Portals are also used to help companies facilitate communications with their clients, suppliers, and partners—clients can securely order products or send incoming orders and forecasts to partners' sales staff, for example. Overall, the browser is now the primary interface between man and machine for many workers, particularly knowledge workers.

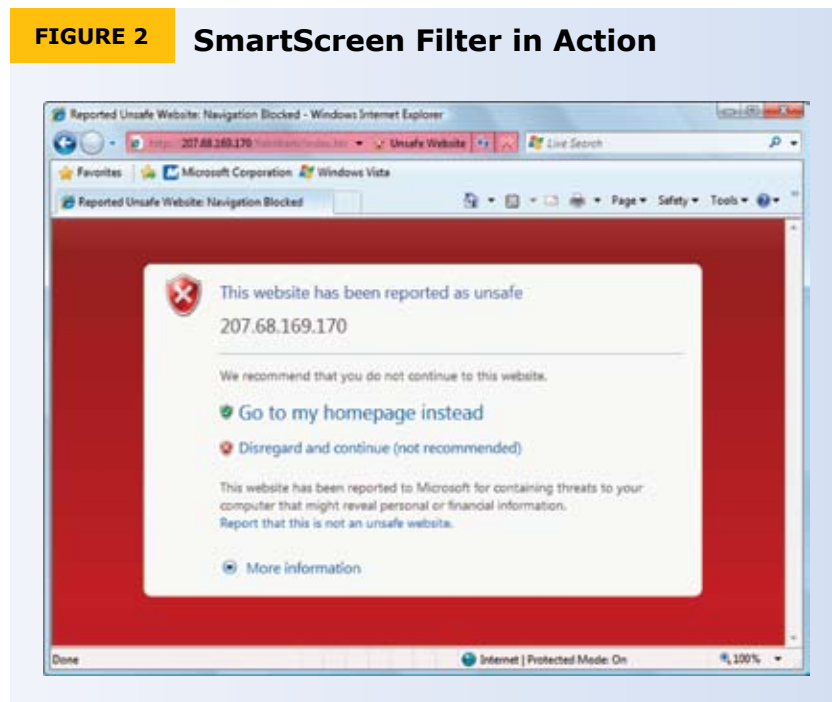
“There is no question that browsers are becoming more important in the enterprise for things such as enterprise portals,” agrees Analyst Matt Rosoff of Directions on Microsoft, a consulting firm with expertise in Microsoft® Corporation technologies. “In addition, an increasing number of applications can use a browser as a front end for Web-based access to Microsoft® Outlook® and Microsoft Dynamics® CRM. Enterprise research planning products are also moving toward browser-based access.” Microsoft Outlook is the messaging and collaboration client, and Microsoft Dynamics CRM is business software.

As mesh computing and cloud computing become ubiquitous, the browser will become even more important. It is the front end to applications that run in the cloud.

What this increased importance means is that the browser is a strategic part of the IT infrastructure. In fact, the browser should no longer be considered a mere piece of software. It is the user interface and conduit for multiple applications. And it needs to be deployed and managed like any other vital piece of IT infrastructure.

Because a browser is central to an enterprise, a company's choice of browser is as important as its choice of any other piece of IT infrastructure. A browser for the enterprise needs to be highly secure, compatible with a wide range of applications and standards, and centrally deployable and manageable, in addition to offering productivity-boosting features.

FIGURE 2 SmartScreen Filter in Action



Internet Explorer 8: Designed for the Enterprise

Internet Explorer 8 has been designed from the ground up to be enterprise-ready. It helps reduce security risk through features such as a cross-site scripting filter, the SmartScreen® Filter, and safer controls and management of the Microsoft® ActiveX® technologies, platform, controls, scripting, and server framework. Internet Explorer 8 is compatible with all common established and emerging Web standards such as those overseen by the World Wide Web Consortium (W3C), which is the primary body responsible for developing interoperable Web standards, tools, and technologies, and with new Web 2.0 technologies such as asynchronous JavaScript and XML (AJAX). It was designed to be compatible with a wide variety of existing enterprise applications and line-of-business applications. Productivity-enhancing features such as Accelerators and Web Slices boost user productivity and allow enterprises to build new types of enterprise portals and applications.

For an in-depth look at the enterprise features of Internet Explorer 8, download "Windows Internet Explorer 8 Beta 2: Technology Overview for Enterprise and IT Pros" at: www.microsoft.com/downloads/details.aspx?FamilyID=bc9c6664-8782-4851-a932-359ce8b5bdb5&displaylang=en.

Why Browser Security Is Vital; What Internet Explorer 8 Offers

Despite firewalls and other security tools, enterprises are more open to attack today than ever before, because the Internet is an integral tool in the ways in which they do business. Literally every person in a company uses a browser, which means that every single person can put the entire company at risk. The browser is the most used—and the most vulnerable—tool in the modern enterprise.

Many dangers exist. Malicious software, including spyware and Trojans, can invade a device via the Web even if someone does not consciously download a piece of software. That malicious software, once on one person's PC, can spread to other machines on the company's network and potentially infect corporate servers, as well. Malicious Web sites can trick people into giving out private information, potentially including corporate data. Sophisticated assaults, such as cross-site scripting attacks, can exploit vulnerabilities in Web applications.

FIGURE 3 Standards Compliance

Standard or Standards Test	Benefit
Acid2 Test compliance	Internet Explorer 8 beta passed this test from the Web Standards Project, which tests browsers for a wide variety of HTML and other standards.
World Wide Web Consortium standards	Internet Explorer 8 is compatible with the W3C, the primary body responsible for developing interoperable Web standards, tools, and technologies.

Source: Microsoft Corporation

Internet Explorer 8 helps reduce security risks with a powerful set of privacy and security enhancements. (See Figure 1, "Security Toolbox," on page 2 for more details.) The SmartScreen Filter helps protect against phishing attacks, in which a malicious Web site masquerades as a legitimate site and tricks a user into giving up personal or corporate information or downloading malicious software. The filter builds on the phishing filter technology introduced in Internet Explorer 7.

SmartScreen Filter includes new heuristics and enhanced telemetry for more accurate flagging of phishing attacks, has antimalware support to stop the downloading of malicious software, and has a clearer user interface. An added layer of security in the filter makes it less likely that a corporate network or systems on the network will be compromised. (See Figure 2, "SmartScreen Filter in Action," on page 3 for more details.)

Internet Explorer 8 also includes safer ActiveX controls and better management. These tools are particularly important for businesses, because many line-of-business applications use ActiveX controls. Internet Explorer 8 allows for greater and more granular management of ActiveX controls, including where, when, and how they load and which users are allowed to load them.

The cross-site scripting filter in Internet Explorer 8 helps to solve an increasingly common security problem on the Web. Most Web sites include a combination of content from the local site itself and from partners. This combination enables cross-site scripting attacks, which can perform a variety of malicious actions, including monitoring someone's keystrokes. The filter locks down the browser to help protect PCs from Web sites that are vulnerable to cross-site scripting attacks.

Internet Explorer 8 also has security tools that were first introduced in Internet Explorer 7, including Data Execution Prevention. This feature can help stop malicious code from running and quarantines it.

FIGURE 4 Applications and Technology Compliance

Application or Technology	Benefit
Asynchronous JavaScript and XML (AJAX)	Improved AJAX handling ensures that Web-based applications work in the way developers intended.
Line-of-business applications	Preliminary testing of business applications is underway for compatibility with the Internet Explorer 8 beta, and the vast majority has passed.
Compatibility View	A single click allows sites written for Internet Explorer 7 to be properly viewed in Internet Explorer 8.

Source: Microsoft Corporation

"If a user goes to a site that has been compromised, Internet Explorer 8 will alert the user to the danger," explains Rob Enderle, principal analyst at the Enderle Group. "This has not been addressed in the past. Internet Explorer 8 takes into account the real world."

The ability in Internet Explorer 8 to selectively disable features, based on integration with Group Policy, provides a more secure environment for people interacting with information and other people over the Internet, O'Kelly notes.

Other browsers are not designed to address some organizational IT requirements, because they are primarily focused on individuals rather than organizational needs. O'Kelly says Microsoft has made a huge investment in addressing IT requirements in Internet Explorer 8.

"By any measure, Internet Explorer is a much safer browser," Enderle adds. "From the enterprise standpoint, a user on the browser is much less likely to bring a virus in or give out confidential information than with previous versions of any other browser type."

For more information about the new security features in Internet Explorer 8, go to: www.microsoft.com/windows/internet-explorer/beta/features/stay-safer-online.aspx.

The Importance of Browser Compatibility

Because the browser is now a universal front end to enterprise-level applications, applications developed in-house, and portals, it is vitally important that a browser have the highest level of compatibility with standards and applications. An enterprise-ready browser must adhere to commonly accepted Web standards, in addition to emerging standards and technologies. Different applications, portals, and Web-based services use different standards and technologies. If a browser is to be a usable universal front end for an enterprise, it needs to adhere to multiple standards and technologies.

The new Web-rendering engine in Internet Explorer 8 was designed to work with well-established standards, emerging standards, new technologies, and existing applications. It uses code specifically written to work with the widest range of technologies and standards. Internet Explorer 8 also offers improved support for the major existing and emerging Web standards—for example, a complete implementation of the Cascading Stylesheets 2.1 standard developed by the W3C. In addition, the Internet Explorer 8 beta passed the Acid2 Test from the Web Standards Project, which tests browsers for a variety of HTML and other standards. (See Figure 3, “Standards Compliance,” on page 4 for more details.)

FIGURE 5 User Productivity Enhancements

Technology	Benefit
Accelerators	Quickly gather information from external Web sites without having to leave the current page.
Web Slices	Subscribe to interactive content from Web pages. This capability can help line-of-business applications interface more easily with customers.
Improved tab handling	Related tabs are automatically grouped together and color-coded for improved productivity. Opening a new tab could automatically launch an enterprise portal.

Source: Microsoft Corporation

“Internet Explorer 8 proves there is a lot of room for innovation in the Web-centric user experience and that innovation can be compatible with a commitment to standards,” O’Kelly notes.

The new browser is also backward-compatible with applications and pages written for previous versions of Internet Explorer. Developers may, for example, use a metatag to tell Internet Explorer 8 to render pages using Internet Explorer 7 compatibility mode. In addition, a Compatibility View button (explained in more detail later in this white paper) allows a user to display any page using Internet Explorer 7 compatibility mode. Internet Explorer 8 displays intranet applications in Internet Explorer 7 mode to ensure the best compatibility within the organization, because many line-of-business applications today are not written to Web standards.

Internet Explorer 8 takes advantage of AJAX, used by many Web 2.0 applications and sites. AJAX is a group of interrelated Web development techniques used for creating interactive Web applications or rich Internet applications. Older browsers commonly have problems working properly with AJAX-based Web sites, but Internet Explorer 8 was written with AJAX in mind, and it works correctly with these sites. (See Figure 4, “Applications and Technology Compliance,” on page 5 for more details.)

During the Internet Explorer 8 beta testing stage, millions of people used the browser with thousands of sites and applications worldwide to help test its compatibility with

the existing Web. For additional technical information about various applications' compatibility, go to: msdn.microsoft.com/iecompat.

Internet Explorer 8 uses its new Web-rendering engine as the default for displaying Web pages and running Web-based applications. Some Web sites or applications, though, may have been written specifically for Internet Explorer 7 and may not display pages as expected in Internet Explorer 8. A simple-to-use compatibility mode in Internet Explorer 8 allows those sites to be displayed as if there were written for Internet Explorer 7. Users simply click the Compatibility View button, and the site will display properly—not only this one time but every time that site is visited in the future.

“Microsoft did the right thing by making Internet Explorer 8 more compatible with a wide variety of standards,” Rosoff says. “And by introducing Compatibility View and allowing Group Policy to be used to default the browser to Internet Explorer 7 compatibility mode, Microsoft also ensured that Internet Explorer 8 will be compatible with applications written for Internet Explorer 7.”

Productivity-Boosting Browsing Required

Office suites have productivity-boosting features; for example, the Ribbon in Microsoft® Office 2007. But browsers are generally considered a blank slate when it comes to productivity features.

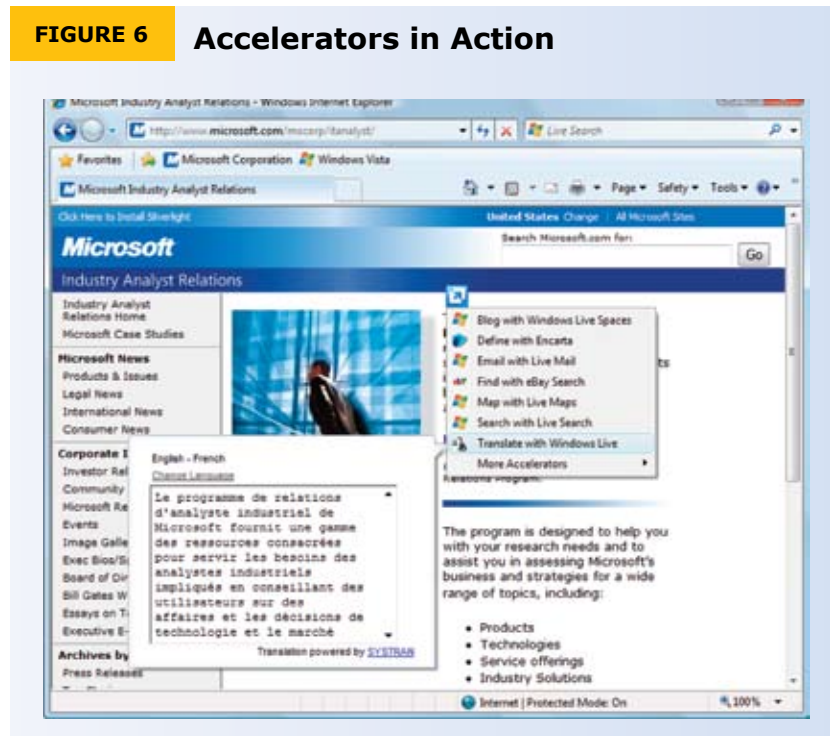
However, now that browsers are the central jumping-off point and front end for enterprise applications and portals, their productivity features are considered just as important as the Office suite's productivity features. The innovative use of tabs and the introduction of new technologies to more easily gather information are of vital importance in a knowledge-based economy.

“There are a number of productivity boosters for users that were introduced with Internet Explorer 8,” Rosoff says. “They will eventually be used by developers to enhance enterprise applications.”

Internet Explorer 8 productivity-boosting features include Accelerators, Web Slices, and improvements to Search and tabbing. (See Figure 5, “User Productivity Enhancements,” on page 6 for more details.)

Knowledge workers who frequently have to copy information from a Web page and then

FIGURE 6 Accelerators in Action



have to go to another Web page to take action on that information—for example, copying an address from one site and pasting it into a mapping service on another site—will particularly welcome Accelerators. An Accelerator gives users the ability to immediately take action on information found online without having to leave the page and manually navigate to a different site.

To use an Accelerator, a user selects text, right-clicks, and chooses from a list of Accelerators—for example, a mapping service, a translation service, or an encyclopedia. (See Figure 6, “Accelerators in Action,” on page 7 for more details.) That service then delivers the information directly to the user, without his leaving the initial page. For example, a map will display in a flyaway right on the page itself, and the user can interact with it by zooming in and out, thereby getting more information about the location and so on. Accelerators can easily be written for any service, so an enterprise could write its own Accelerators to gather information about its clients, for example.

“I can envision Accelerators written into enterprise applications in a number of ways,” Rosoff says. “For example, an Accelerator would be able to look up a record in a CRM system or copy and paste address information into a form.”

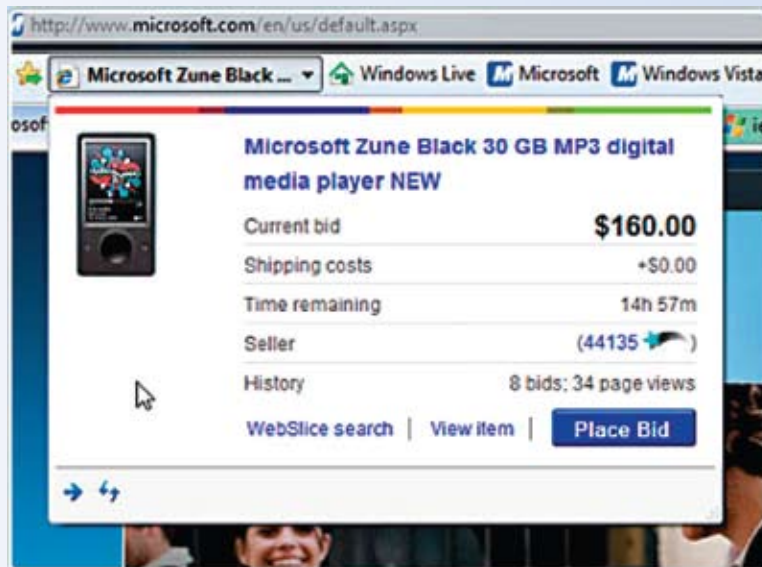
Web Slices can similarly boost worker productivity. A Web Slice delivers data directly into a user’s Favorites Bar so that it is instantly available in the browser, no matter where a user is on the Web. (See Figure 7, “Web Slices in Action,” on this page for more details.) The slice constantly updates itself and alerts the user when new information is available. Enterprises can write their own Web Slices—for example, one displaying constantly changing sales information.

“Web Slices and Accelerators will be very significant for enterprise IT groups, making it possible for application developers to streamline and simplify applications,” O’Kelly notes.

Tab improvements in Internet Explorer 8 can also boost productivity. Tabs are grouped together and color-coded so that it is easy to see which tabs are related. It is easy to duplicate tabs, open new tabs, and open entire tab groups. In addition, when a new tab is opened, it does not open up as a blank page; rather, it contains useful information such as Accelerators, links to Web sites, and more. Enterprises can customize this page so that it could, for example, become an enterprise Web portal.

In Internet Explorer 8 it is “much easier to manage open tabs and keep them active,” Enderle adds. “Tabs appear to be quite a bit faster than the previous generations.” These productivity boosters offer significant business benefits. (See Figure 8, “IT

FIGURE 7 Web Slices in Action



Professionals’ Features Checklist,” on this page for more details.) For example, CUNA Mutual Group, which provides financial and member-relationship services to credit unions, runs more than 140 line-of-business applications through a browser and discovered that Internet Explorer’s tabbed browsing, Instant Search box, and customizable settings improve user productivity.

“Tabbed browsing is less taxing on computing resources and thus improves application performance and the user experience,” says David Sieloff, Desktop Architect at CUNA Mutual in Madison, Wisc. Sieloff was talking about CUNA Mutual’s standardization on Internet Explorer 7; Internet Explorer 8 has even more productivity-boosting features, including Accelerators and Web Slices.

For an overview of the new productivity-boosting features in Internet Explorer 8, go to: go.microsoft.com/fwlink/?LinkId=130884.

The Importance of Browser Manageability and Enterprise-Readiness

For an enterprise, it is not enough that a browser be secure, compatible, adhere to standards, and sport productivity-boosting features. It also must be enterprise-ready; that is, the browser must include management and deployment tools that make it easy to deploy enterprisewide.

Internet Explorer 8 has the full weight of Microsoft support and deployment services behind it, in addition to a variety of management and deployment tools. Among these tools are an enterprise deployment guide, the Systems Center Configuration Manager, the Internet Explorer Administration Kit, Microsoft® Windows Server® Update Services, and Group Policy enhancements. Other browsers lack this level of support. Furthermore, they do not come with enterprise-ready deployment and management tools.

FIGURE 8 IT Professionals’ Features Checklist

Feature	Benefit
New deployment features	Internet Explorer 8 can be deployed as a stand-alone application or slipstreamed into a Windows Vista deployment image.
Group Policy enhancements	Internet Explorer 8 includes more than 100 new Group Policy settings, including an improved capability to configure and customize the browser for an entire enterprise; for example, disabling certain features and adding Accelerators.
Improved standards support	Internet Explorer 8 is compatible with all major established and emerging Web standards such as those overseen by the World Wide Web Consortium.
Improved compatibility	Internet Explorer 8 is widely compatible with enterprise applications and line-of-business applications.
Internet Explorer Administration Kit (IEAK)	The IEAK provides system administrators with tools to deploy Internet Explorer 8 enterprisewide and customize any aspect of it, including features, security, communications settings, and other important elements.
Professional support	Microsoft offers a wide variety of ways for IT professionals to get support for Internet Explorer 8.
Deployment guidance	IT professionals can be reassured that with Microsoft’s deployment help, they will be able to more easily deploy Internet Explorer 8 enterprisewide.

Source: Microsoft Corporation

"Microsoft focuses on enterprise deployments of Internet Explorer through features such as slipstream deployment and the Internet Explorer Administration Kit," Rosoff adds.

Easy to deploy and manage in an enterprise, Internet Explorer 8 supports a variety of deployment options and configuration through the Internet Explorer Administration Kit and Group Policy. (See Figure 8, "IT Professionals' Features Checklist," on page 9 for more details.) It can be deployed as a stand-alone application or as part of a Microsoft® Windows Vista® deployment through "slipstream." Slipstream allows system administrators to create a Microsoft® Windows® installation image that includes Internet Explorer 8, thereby eliminating the need to install the browser separately. Internet Explorer 8 will also work with the management tools that enterprises currently use to manage other Microsoft software. In addition, Group Policy enhancements make it extremely easy to configure and customize the browser for an entire enterprise; for example, disabling certain features and adding Accelerators.

Internet Explorer 8 offers compatibility with applications written for Internet Explorer 7. It renders sites in the Intranet Zone using the Internet Explorer 7 engine by default. A simple tag on Web pages or Web servers tells Internet Explorer 8 to render like Internet Explorer 7. This capability gives companies the benefits of Internet Explorer 8 without requiring application upgrades. In addition, new events are being added to the Application Compatibility Toolkit to help IT professionals detect and resolve potential issues between Internet Explorer 8 and their internal applications and Web sites. Internet Explorer 8 also provides for greater administrator management of ActiveX controls through per-user ActiveX and per-site ActiveX options.

Standards support in Internet Explorer 8 (covered in a previous section of this white paper) will help save developers and allow vendors to build applications once and have them work across different browsers.

For more details about the enterprise-readiness of Internet Explorer 8, read about the Internet Explorer 8 Readiness Toolkit at:
www.microsoft.com/windows/internet-explorer/beta/readiness/it-pro.aspx.

Conclusion

As enterprises increasingly rely on the Web and the Internet as the foundation platform for delivering information to their employees, customers, and suppliers, a stable, feature-rich, and secure browser is a prerequisite for success. The new Internet Explorer 8 browser from Microsoft provides enterprises with the front-end interface today for their applications, portals, and dashboards of the future.

What You Can Do Next

Download and try Internet Explorer 8 Beta 2 at: www.microsoft.com/ie8.

Visit the TechNet IE8 Web site at: www.technet.com/ie.

Go to the Microsoft Developer Network Web site for Internet Explorer deployment and application compatibility resources at: www.msdn.microsoft.com/ie.