

Does the Browser Really Matter?

One Organization's Journey Toward Web Browser Freedom

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What can an organization do when it wants to improve client-end security and, as a by-product, reduce its support costs? It can do the unthinkable and replace most of its Microsoft products. However, a more reasonable (and less disruptive) strategy would be to simply replace Internet Explorer.

The year 2004 did not give computer professionals any reprieve from the constant onslaught of security threats. Because Microsoft is a potential attacker's favorite target, Windows users were most adversely impacted. And because most Windows vulnerabilities are actually Internet Explorer vulnerabilities, this application has become the largest target of them all.

As frustration levels rise (and Microsoft responses to security vulnerabilities are increasingly viewed as inadequate), organizations are beginning to evaluate—and adopt—Microsoft alternatives. This is the story of one such organization. To protect their privacy, managers at the organization have asked that they not be identified. We will call the company FFX Pioneers.

Why not Internet Explorer?

Replacing a popular and well-known application such as Internet Explorer can be a frightening task for almost any IT department. However, several factors have recently made Internet Explorer a less attractive solution:

- **Lack of innovation.** The computer industry has been critical of Microsoft for not adding new features to Internet Explorer that are similar to those of its competitors. Although Internet Explorer is extensible, Microsoft rarely takes advantage of the feature. Perhaps Microsoft's failure to innovate is the result of Internet Explorer's presence on 90 percent of the world's desktops—the company does not feel compelled to compete.
- **Failure to upgrade.** Microsoft has announced that it does not intend to release a new version of Internet Explorer until the next version of Windows in 2006. The company has also stated there will be no new versions of Internet Explorer for older versions of Windows. It appears as if there is some truth to the rumor that Microsoft's strategy is to devalue the Web browser in favor of some of its other products.
- **Weak security architecture.** The overwhelming majority of malware exploits Internet Explorer vulnerabilities. In fact, these vulnerabilities have been so numerous that in June 2004 the United States Computer Emergency Readiness Team (US-CERT) recommended that organizations switch browsers to reduce their risk of attack. While aggressive patch

deployment provides some protection, new Internet Explorer flaws are discovered too often for Microsoft to quickly protect against. In one day in February 2005, Microsoft released 12 patches for 16 Windows security flaws—six of those fixes for Internet Explorer alone.

- **Inadequate response to security events.** Microsoft has been criticized for delays in issuing security patches. The company argues that delays are due to the level of effort required to ensure a stable, effective patch. While this excuse is somewhat valid, organizations remain vulnerable during those potentially long periods.
- **Failure to adequately protect all platforms.** In August 2004, Windows XP users got both a browser upgrade and security enhancements with the release of Service Pack 2 (SP2). Although SP2 was well received, similar updates were not provided for Internet Explorer on earlier Microsoft operating systems, leaving the majority of the world's computers insecure.

Why is Internet Explorer so insecure?

Internet Explorer is a large and complex program. As a result, it possesses more potential holes to exploit. However, there are two factors that make Internet Explorer inherently less secure than its alternatives:

- **Integration with Windows.** Some argue that Internet Explorer will never be as secure as its alternatives because of its tight integration with the Windows operating system. Because of this linkage, Internet Explorer exploits run with the same security privileges as the Windows operating system itself.
- **Native support for insecure technologies.** Internet Explorer's native support for client-side scripting technologies, such as ActiveX, VBScript, and JavaScript, has long been criticized by security experts who consider them especially dangerous. Many attacks have been launched via these technologies.

Why Firefox?

Internet Explorer resides on 90 percent of the world's desktops because it has one competitive advantage—it comes preinstalled. However, organizations are quickly discovering there are some rather good alternatives. At one time, using an alternative browser was a way of launching a subtle form of protest against Microsoft's market dominance. Today, however, the main motivator has become security.

None of the alternative browsers have energized the industry like Firefox. Since Firefox's release, Web sites such as OneStat.com, WebSideStory, and W3Schools have reported steady increases in Firefox use and just as steady declines in Internet Explorer use. Since the release of version 1.0 on November 9, 2004, this Netscape Navigator descendent has generated almost as much media attention as the green Versace dress Jennifer Lopez wore to the 2000 Grammy Awards. While much of the hype is

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justified—Firefox does have some solid technical merits—some of the excitement exists because such a small upstart is viably challenging one area of Microsoft’s hegemony.

Two factors were most important in FFX Pioneers’ choice of Firefox as a replacement for Internet Explorer at the organization:

- **Cost.** Firefox is free. Given FFX’s financial constraints, *free* fit perfectly into its current cost model.
- **Security.** Firefox is more secure than Internet Explorer for many reasons—some technical and some nontechnical. For example, Firefox offers additional protection by virtue of not being as big a target as Internet Explorer. It also does not natively support some of the more inherently insecure technologies, such as ActiveX. Although a Firefox extension for ActiveX does exist, installing it would greatly decrease Firefox’s security posture. Firefox keeps computers safe from malicious spyware by not loading those harmful ActiveX controls. Finally, Firefox does not have any mode similar to Internet Explorer’s *safe mode* that allows untrusted content to be executed automatically. However, security does come with some costs, and the lack of support for these technologies may affect Firefox’s performance on some sites.

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The migration

After several weeks of discussions with senior staff, FFX Pioneers’ IT department was given permission to migrate the organization’s 60 (mostly nontechnical) end users to Firefox. Users were informed both in e-mail messages and staff meetings of the reasons for the change.

Because there has been little money in the IT budget due to the recent economic downturn, systems averaged three years in age. Replacements were performed piecemeal—and only when absolutely necessary. Only 30 percent of the clients were installed with Windows XP Professional; the others were configured with Windows 2000 Professional on several different types of hardware platforms. The lack of one consistent configuration made it impossible to reap the benefits of imaging. Luckily, FFX did not have any back-end applications that mandated the use of Internet Explorer. The organization’s liberal policy with respect to Internet use, however, sometimes got it into trouble.

When researching the migration strategies of others, FFX Pioneers learned that some organizations surreptitiously replaced Internet Explorer with Firefox. The expectation was that users simply wouldn’t notice (although how bookmarks were handled was never addressed). FFX was uncomfortable with this strategy and, as a means of increasing buy-in, decided to directly involve users in the migration process. The organization’s relatively small size allowed them to do this.

It was decided not to push the application out to the users. Instead, a technician sat down with each person (volunteers first) and had him or her

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download and install the application. The technician then reviewed the application's main features. At the end of the session, the Internet Explorer shortcut on the desktop was deleted. The entire process averaged only 30 minutes per user. The company was migrated in six days.

IT staff initially feared that several items could undermine the migration. They were especially concerned about the following issues:

- **User resistance.** Most people are, by their nature, resistant to change. Despite their attempts to achieve staff buy-in, the IT department feared that users would resist the change and secretly resort to the familiar (and comfortable) Internet Explorer. If so, any advantages of the migration would be immediately negated. Browser loyalty, in other words, might prevent a successful deployment.
- **Problems with important sites.** For several reasons, some quite valid, the majority of Web developers build their sites with Internet Explorer (which is less standards-compliant than Firefox) in mind. Because Firefox is less forgiving when it encounters unusual code, FFX information technology staff feared users would get frustrated if they had too many problems when viewing certain sites with Firefox.
- **Increased support requirements.** Few technical professionals prefer to support mixed environments. When troubleshooting a problem between the software products of one manufacturer, one is more likely to avoid the finger-pointing that often occurs when trying to fix a problem that involves the products of two different vendors. In this case, the need to reduce support costs would be obviated if there were too many interoperability issues.

Much to FFX's relief, user response to the migration, and to Firefox, was extremely positive. A postdeployment survey indicated that roughly half of the users were pleased to find that Firefox functioned properly—it displayed what was needed, when it was needed. When users did switch back to Internet Explorer, it was on those rare occasions when it was the only browser that would work properly on the site or in those instances where the page explicitly stated that it was optimized for Internet Explorer.

Most users were pleased with Firefox's additional features (although some admitted that they were not sure if the features were actually new or simply more accessible through Firefox than Internet Explorer). Some end users reported increased use of keyboard shortcuts, while others appreciated that more could be customized.

Although happy with Firefox's support for tabbed browsing, its wide selection of plug-ins (which Firefox calls *extensions*), its password manager, and its support for RSS (an increasingly popular XML format that is used to disseminate news and content over the Internet), FFX Pioneers' users most appreciated some of its simplest features:

- **Ease of bookmarks transfer.** Retaining bookmarks was a main concern prior to the migration. Fortunately, Firefox quickly and accurately imported all bookmarks from Internet Explorer.
- **Speed.** Users, particularly those with slower PCs, were especially pleased with Firefox's speed. Because Firefox is not burdened with some of the feature overhead that plagues its competitors, it consumes less memory—50 to 75 percent less when compared to Internet Explorer. And because of its new rendering engine, called Gecko, pages typically load much faster.
- **Integrated and customizable search bar.** Because a search bar is built into the Firefox menu bar, the application allows users to conduct searches without having to first surf to the search engine. Although search engines such as Google and Yahoo have plug-in search bars for Internet Explorer, the Firefox search bar is more flexible because it allows you to also add (and search) other sites such as Webster's Dictionary, AskJeeves, and Wikipedia.

Despite the extremely positive result, FFX Pioneers' move to Firefox was not entirely seamless. The primary frustration was related to pages specifically designed for Internet Explorer—especially those that required ActiveX. For the most part, however, most Web sites that staff needed to access worked extremely well with Firefox.

A positive change

Several months after the migration, FFX's users remain pleased with their new Web browser. The experience was less traumatic than expected and allowed the IT staff at FFX to confirm one thing and learn another:

- **Firefox does improve security—at least for now.** FFX's client-related support costs have decreased somewhat as security-related events are less frequent and, when they do occur, less traumatic. It is recognized, however, that attacks on Firefox will increase as it becomes more popular. (In fact, shortly after the migration several Firefox vulnerabilities were announced.) The hope is that any Firefox-based attacks will not be as devastating as those launched through Internet Explorer.
- **End users have no browser loyalty.** Technicians tend to have a great deal of loyalty to their applications—an unusual bond typically accompanies familiarity. End users, however, do not appear to develop the same kind of loyalty, especially when it comes to Web browsers. In fact, most FFX users were extremely eager to change browsers—excited about the opportunity to learn something new. In the end, FFX's users were much less resistant to change than expected.

Despite Firefox's strengths and Internet Explorer's weaknesses, organizations cannot completely rid themselves of Internet Explorer. First of all, it cannot be uninstalled from the Windows operating system. Second, it is required when the use of ActiveX cannot be avoided, such as with WindowsUpdate.

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Firefox is as good as advertised. It does not represent a revolution in browser technology, but it does satisfy a current need for a good, stable Web browser that does not make the current security situation any worse.

Third, it is needed for those non-standards-compliant sites that are especially designed for Internet Explorer.

Firefox is as good as advertised. It does not represent a revolution in browser technology, but it does satisfy a current need for a good, stable Web browser that does not make the current security situation any worse. However, as security professionals, we are troubled by the fact that most of Firefox's extensions (and Firefox itself, for that matter) are not digitally signed—a fact that will soon be exploited by a wily attacker.

So, does the browser really matter? Absolutely. Like e-mail, the browser has become a strategic corporate application. However, the question of which browser matters depends more on who you are. Techies think the browser matters because the choice of browser may impact how well they can do their jobs. However, it appears as if end users will be happy with almost any browser that does not interfere with their ability to perform their work. Changing an end user's word processing program would be much more challenging.