How Microsoft IT Deployed Internet Explorer 9

Deployment Process Effectively Delivers Improved Browser to More Than 100,000 Computers

Technical White Paper

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Executive Summary

Situation

Microsoft wanted to test the prerelease versions of Internet Explorer 9 in order to help provide feedback to the Internet Explorer product group during development. In addition, Microsoft also wanted to verify application compatibility and deployment tools to ensure that scenarios were fully tested for enterprise-wide rollout before the public release of Internet Explorer 9.

Solution

Microsoft developed a testing and deployment strategy that delivered Internet Explorer 9 to more than 100,000 desktop computers around the world. Microsoft used its own deployment tools and management technologies to reduce the time, cost, and complexity of planning, building, and deploying Internet Explorer 9.

Benefits

* Improved the final product by providing feedback to the product group during deployment
* Improved employee satisfaction with the solution
* Streamlined and automated testing processes and workflow
* Reduced effort to administer and support the solution
* Reduced Helpdesk incident support rate
* Delivered Internet Explorer 9 RTM ahead of milestone goal using well defined processes and automated tools

Products & Technologies

* Internet Explorer 9, including prerelease versions, Internet Explorer 9 Beta, and Release Candidate
* Windows Vista
* Windows 7 and Windows 7 SP1
* Windows Server 2008 R2
* System Center Configuration Manager 2007 and System Center Configuration Manager 2012 Beta
* Hyper-V
* System Center Virtual Machine Manager 2008 R2

The prerelease version of Microsoft® Internet Explorer® 9 gave Microsoft Information Technology (Microsoft IT) the opportunity to validate Internet Explorer 9 during its development, and to test deployment tools and processes designed to simplify enterprise-wide application rollouts. The team also wanted Microsoft users to experience new Internet Explorer 9 features designed to take advantage of emerging web standards, as well as new security features, while minimizing disruptions due to the deployment.

Microsoft IT took a leadership role in deploying the browser early, and did so in a systematic way. Using Microsoft employees to test the prerelease versions of Internet Explorer 9 provided a real-world testing environment for capturing product and deployment feedback. This allowed Microsoft IT to uncover bugs early in the product development process, helping to improve the product before its release to customers. Early testing also addressed application compatibility issues with line-of-business (LOB) applications, ensuring minimal Helpdesk calls for LOB related issues.

This white paper describes the deployment planning, delivery process, and ongoing support for Internet Explorer 9 across Microsoft. The paper is intended for enterprise technical decision makers, technical architects, and deployment managers who are considering an Internet Explorer 9 deployment.

This white paper is based on the experience and recommendations of Microsoft IT as an early adopter. It is not intended to serve as a procedural guide. The Microsoft environment is unique. Its users tend to be more technical than average users, and the Microsoft IT desktop management philosophy gives users control over their own computers. Installation of prerelease software is strictly voluntary at Microsoft, and Microsoft IT made the Internet Explorer 9 client available to all employees during the deployment process.

Each enterprise environment has its own unique requirements. Therefore, each organization should adapt the plans and activities described in this white paper to meet its specific needs. Also, this white paper should be used along with the deployment guide provided by the Internet Explorer 9 site for IT Pros, found at <http://technet.microsoft.com/en-us/library/ff973978.aspx>.

Note: For security reasons, the sample names of internal resources and organizations used in this paper do not represent real resource names used within Microsoft, and are for illustration purposes only.

Introduction

Microsoft IT is unique in terms of its broad variety of responsibilities. The primary role of Microsoft IT, as in any other large organization, is to support the technology infrastructure across the Microsoft enterprise. Microsoft IT also provides services that range from user support and telecommunications management, to server and network operations. This includes managing connectivity for more than 300,000 client computers and devices worldwide. Microsoft IT ensures that nearly 89,000 employees, 10,000 contractors, and 75,000 vendors in more than 400 Microsoft locations around the world can access the corporate network 24 hours a day, seven days a week. Microsoft IT also manages internal LOB applications that facilitate day-to-day business operations at Microsoft.

Because the primary focus of Microsoft is developing software, early adoption and testing of prerelease software is a part of the culture and mission of Microsoft as an organization. As its first and best customer, Microsoft IT uses the large enterprise and user base as a proving ground for new products before release.

Microsoft IT does not mandate why and when Microsoft moves to a different technology, like some enterprise IT organizations do. For this deployment, Internet Explorer 9 provided the next step in the evolution of Internet Explorer. The choice to migrate to Internet Explorer 9 was not driven by end-of-life for previous versions of Internet Explorer. Rather, two key factors drove the decision:

* To dogfood Internet Explorer 9, to help improve the product and user experience.
* To incur benefits from enhanced productivity and reduced costs.

Microsoft refers to the internal prerelease software deployment process as Dogfood testing. Early adoption and testing of Internet Explorer 9 validated compatibility with LOB applications. It also enabled Microsoft IT to provide real-world feedback to the Internet Explorer product development group to help ensure that the released product was of the highest quality, and provided the best customer experience.

Microsoft IT also wanted to enhance user productivity by enabling users to experience the features and benefits of Internet Explorer 9, and to reduce costs by standardizing on a current browser.

Microsoft IT understands that a standardized desktop can help streamline and reduce the cost of deployment, management, and support. Standardizing on a web browser can be a key contributor to that overall benefit. Many Internet Explorer 9 changes motivated the deployment of a new web browser, including:

* **Improved User Experience.** User acceptance has a direct impact on IT incident rates and Helpdesk calls. Many new Internet Explorer 9 features improve the user experience. These include the Download Manager, the New Tab that displays frequently visited websites, the One Box, which provides a single box for navigation and web searches, and Tear-off tabs. Microsoft Windows® 7 integration with the taskbar and Jump Lists provide users with quick access to business-critical applications, websites, and common tasks. For more information on the Internet Explorer 9 user experience, see the IEBlog at <http://blogs.msdn.com/b/ie/archive/2011/02/15/user-experiences-listen-learn-refine.aspx>.
* **Improved Security Features.** Several new features have enhanced security in Internet Explorer 9. They include:
* **SmartScreen®** filter protection helps shield end users from malware and phishing attacks. Internet Explorer 8 provided the SmartScreen URL filter. Internet Explorer 9 includes an enhanced SmartScreen filter with the Application Reputation service. It warns users about downloaded program files, based on their known trustworthiness. Application Reputation helps improve security by providing users with better choices when downloading program files. For more information on the SmartScreen Application Reputation service, see the IEBlog at <http://blogs.msdn.com/b/ie/archive/2011/05/17/smartscreen-174-application-reputation-in-ie9.aspx>.
* **Tracking Protection** provides an added level of control and choice about the information that third-party websites can use to track browsing activity. For more information on Tracking Protection, see the IEBlog at <http://blogs.msdn.com/b/ie/archive/2010/12/07/ie9-and-privacy-introducing-tracking-protection-v8.aspx>.
* **ActiveX Filtering** allows end users to turn off ActiveX controls for all websites and then turn them back on selectively. For more information on ActiveX Filtering, see the IEBlog at <http://blogs.msdn.com/b/ie/archive/2011/02/28/activex-filtering-for-consumers.aspx>.
* **Improved Compatibility.** Applications and websites that work in Internet Explorer 8 continue to work in Internet Explorer 9. The Compatibility View feature provides a high degree of compatibility from Internet Explorer 8 to Internet Explorer 9, minimizing the need for IT organizations to retest all LOB applications. For more information on Internet Explorer 9 compatibility, see “Understanding the Compatibility View List” at <http://msdn.microsoft.com/en-us/library/dd567845(VS.85).aspx>. Internet Explorer 9 support for emerging web standards, such as W3C HTML5 and Ecma International ECMAScript 5 support, also improve compatibility. To see the results from the Internet Explorer team test cases, see <http://samples.msdn.microsoft.com/ietestcenter/>.
* **Enhanced Administration Tools.** Internet Explorer 9 offers improved customization and management capabilities. They include:
* New **Group Policy** settings that support new features. For example, default Internet Explorer 9 settings can be changed so that a user will be taken directly to an intranet site when they enter a single word, such as helpdesk, in the address bar. For more information on Group Policies, see <http://technet.microsoft.com/en-au/library/gg699420.aspx>.
* **Internet Explorer Administration Kit 9** (IEAK 9) provides IT organizations with programs and tools to help customize, deploy, and administer Internet Explorer 9. This helps save time and money when deploying and managing web solutions. For more information on IEAK 9, see <http://technet.microsoft.com/en-us/ie/bb219517>.
* The **Microsoft Application Compatibility Toolkit** (ACT) contains necessary tools and documentation to evaluate and mitigate application compatibility issues before deploying Windows 7, Windows Vista®, a Windows Update, or a new version of Internet Explorer in your environment. To download the ACT, see <http://www.microsoft.com/downloads/en/details.aspx?FamilyID=24da89e9-b581-47b0-b45e-492dd6da2971>.
* The **Microsoft Assessment and Planning** (MAP) Toolkit helps IT organizations assess their existing IT infrastructure for a variety of technology migration projects. This Solution Accelerator provides a powerful inventory, assessment, and reporting tool to simplify the migration planning process. To download the MAP Toolkit, see <http://www.microsoft.com/downloads/en/details.aspx?displaylang=en&FamilyID=67240b76-3148-4e49-943d-4d9ea7f77730>.

To learn more about Internet Explorer 9 improvements, review the “Internet Explorer 9 - Product Guide for IT Professionals” at <http://technet.microsoft.com/en-us/library/gg619384.aspx>.

Deployment Planning

Before deploying Internet Explorer 9, Microsoft IT carefully planned their strategy and process. Activities included:

* Understanding the existing environment
* Developing a deployment strategy
* Developing a communication plan

This section contains information about the steps Microsoft IT took during the Internet Explorer 9 deployment-planning phase.

Environmental Analysis

Before deploying Internet Explorer 9, Microsoft needed to understand the scope of participating clients, the tools and mechanisms they would use, and the impact to existing LOB applications.

Enhancements to Internet Explorer 9 helped facilitate deployment. These features reduce additional steps required by both deployment managers and users, minimize user disruption, and greatly improve the end-user experience. For example:

* Internet Explorer 9 automatically installs over the top of Internet Explorer 7 or Internet Explorer 8. No uninstall is required.
* Internet Explorer 9 installations will not require a system reboot on a Windows 7 SP1 operating system. The installation may require a reboot on Windows Vista SP2 and Windows 7, depending upon the availability of installation prerequisites.

Client System Requirements

Microsoft IT wanted to make the deployment of Internet Explorer 9 as flexible as possible. They analyzed the existing client base, which included multiple operating systems, browser versions, and, due to the global nature of Microsoft, various languages.

Windows 7 formed a significant portion of the targeted user population. However, Microsoft IT supports a wide range of operating systems. The same holds true for browser versions. Microsoft IT used Microsoft System Center Configuration Manager 2007 to analyze the network environment before deployment. In particular, Microsoft IT used System Center Configuration Manager to determine:

* The number of computers running Windows Vista, Windows 7, Windows Server® 2008, and Windows Server 2008 R2, and whether 32-bit or 64-bit versions of the operating system were used.
* The number of computers running Internet Explorer 7, Internet Explorer 8, or other browsers.
* The language versions being used, such as English, Japanese, German, French, and Chinese Simplified.

Gathering this information directly influenced the logic for the various Internet Explorer 9 deployment packages.

Deployment Tools

Microsoft IT has used System Center Configuration Manager 2007 to manage the majority of desktop clients for several years, and has recently added System Center Configuration Manager 2012 Beta to the environment. Distributed geographically, the hierarchy is comprised of a central site and five child primary sites. Globally, the hierarchy covers approximately 280,000 active physical and virtual, desktop and laptop computers.

* 50,000 clients are managed by System Center Configuration Manager 2012 Beta
* 230,000 clients are managed by System Center Configuration Manager 2007

Figure 1 represents the System Center Configuration Manager hierarchy at Microsoft.

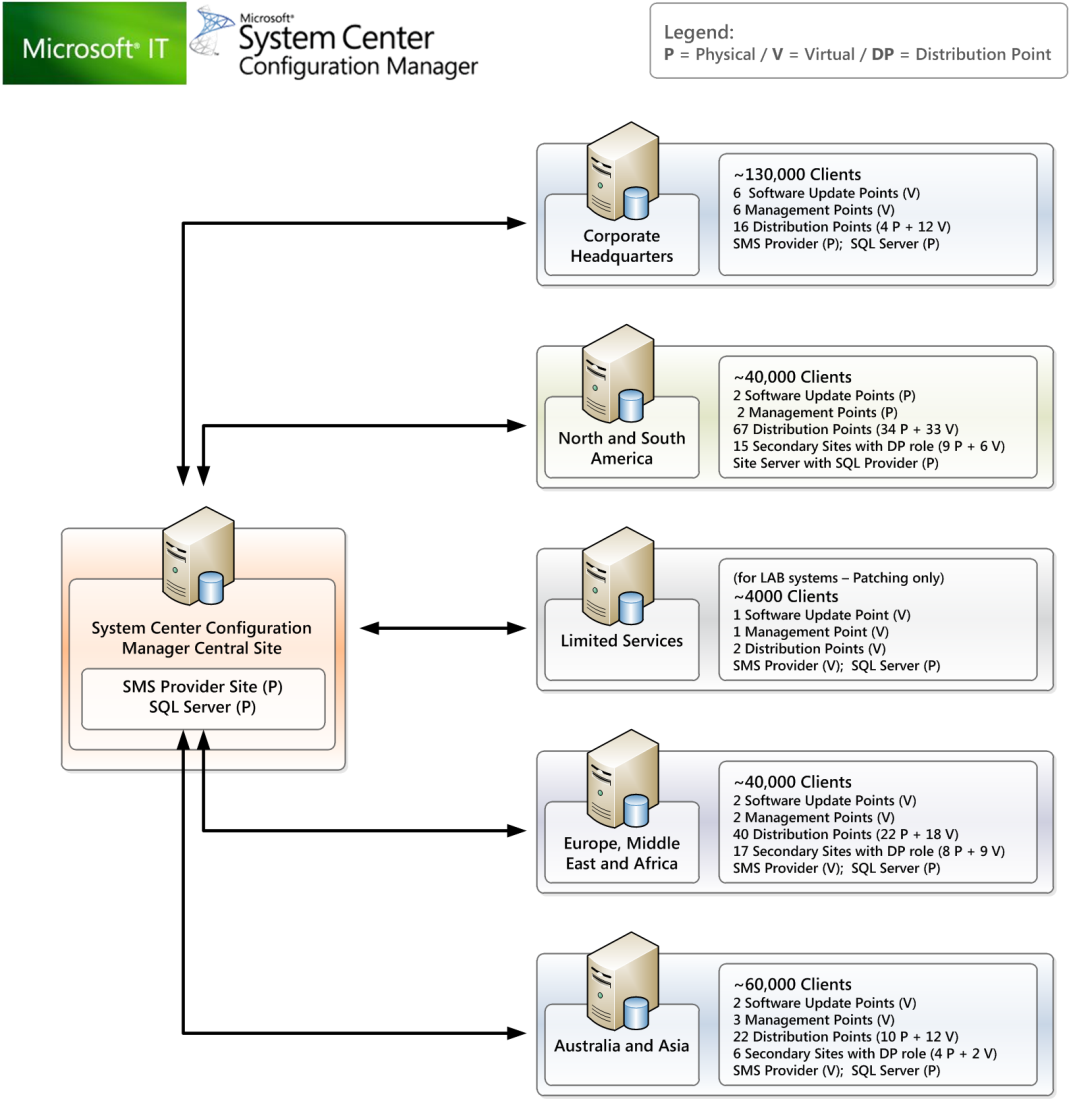


Figure 1. System Center Configuration Manager Hierarchy

Because Microsoft IT uses System Center Configuration Manager for product updates and patches, user and network bandwidth impacts had to be factored into the co-handling of product updates and patches with the Internet Explorer 9 update package.

Deployment Strategy

Microsoft IT decided on a two-fold deployment strategy that would allow them the opportunity to provide feedback to the Internet Explorer product group during the deployment, and also to fine-tune their deployment process. The project was planned around major milestones that coincided with the Internet Explorer 9 product release.

Microsoft IT identified specific deployment goals that it targeted at each phase of the software release cycle. Table 1 depicts the goals that were achieved at each major milestone.

Table 1. Deployment Goals

| Phase | Microsoft IT goals | Duration |
| --- | --- | --- |
| Beta | Deployment validation, and feedback provided to product group | 4 months |
| Release Candidate (RC) | Continuation of broad campus and global deployments  Final LOB application compatibility testing and signoff | 1 month |
| Release to Manufacturing (RTM) | Production release, global deployment | In process |

LOB Application Compatibility Testing

Application compatibility is a critical blocking issue for deployments in any enterprise environment. Microsoft IT faces the same challenge, maintaining more than 1,500 applications in its application portfolio. Testing the most critical LOB applications is an integral part of any deployment, whether an operating system or web browser. For the Internet Explorer 9 deployment, Microsoft IT focused on compatibility with internal web-based LOB applications.

To determine which LOB applications to test during the deployment, Microsoft IT reviewed the list of key LOB applications that were tested with previous releases of Internet Explorer. The deployment team assessed applications according to two criteria. Critical business continuity and Helpdesk impacts were evaluated. Microsoft IT-owned applications with a large and active user base were identified, because impact to those applications had the potential to result in a high volume of issues reported to Helpdesk. The overall goal was to minimize employee dissatisfaction resulting from application compatibility issues.

To minimize cost and effort associated with the testing process, Microsoft IT leveraged key desktop virtualization and virtualization management features available in Windows Server 2008 R2 and Microsoft System Center. Using virtual machines (VMs), Microsoft IT ran LOB applications on virtual desktops that already had a working operating system in place. This provided a higher level of control and efficiency than building a similar system on a physical desktop. Issues were attributable only to the new software, because the testing team verified that the virtual desktop worked properly before the addition occurred.

Microsoft IT used System Center Virtual Machine Manager 2008 R2 (SCVMM) to manage the VM infrastructure, including the VMs and the software images for each test pass. Using SCVMM to create and manage pools of VMs for various application compatibility testing scenarios reduced support calls for unrelated issues.

Microsoft IT spent over seven months testing LOB application compatibility of prerelease builds of Internet Explorer 9 before the beta version became publicly available. The prerelease test passes gave Microsoft IT insight as to which bugs were fixed with the beta release and how to resolve the types of issues that were likely to trigger a spike in internal Helpdesk calls. Microsoft IT achieved a compatibility rate of 99 percent on the 305 most commonly used internal applications they tested. The compatibility rate increased from the 94 percent that Microsoft IT achieved with Internet Explorer 8.

**Note**: To learn more about the LOB application testing methodology used by Microsoft IT, see “LOB Application Compatibility” at <http://technet.microsoft.com/en-us/library/cc411438.aspx>.

To learn more about how Microsoft IT tested LOB applications during the pre-release phase of Internet Explorer 9, see “Microsoft IT Tests Line of Business Application Compatibility for Internet Explorer 9” at <http://technet.microsoft.com/library/gg981681.aspx>.

Reporting Model

Microsoft IT wanted to capture the total number of installations, and installation success and failure rates. This tracking data was vital in fulfilling shared goals with the Internet Explorer product group. It helped ensure that the desired number of users tested Internet Explorer 9 in appropriate scenarios, such as multilingual installations. It also verified the ratio of 64-bit to 32-bit installations. The reporting model also enabled Microsoft IT to compile feedback into easily accessible self-help articles.

System Center Configuration Manager was used to obtain this data. SCCM produced reports that identified successful deployments to the targeted group. System Center Configuration Manager also identified computers with common hardware or software features. This knowledge was important in determining which computers had installed Internet Explorer 9, and ensured test coverage on both Windows 7 and Windows Vista computers. It also helped Microsoft IT understand who in the company, by division and geographical location, was running Internet Explorer 9. The deployment reports provided details that Microsoft IT compared to goals to ensure that the project was on track.

Communication Framework

Throughout Internet Explorer 9 pre-release testing, Microsoft IT used an intranet site that hosted key information, including installation guidance, training material, known issues, and frequently asked questions (FAQ). This site served as the cornerstone of the Microsoft IT communications model.

Helpdesk Awareness

Helpdesk is critical to the success of any deployment. To ensure a smooth transition for end-users, the Microsoft Helpdesk was kept up to date on the deployment process. It was critical that they were aware of deployment levels at various stages and able to accommodate potential high call volumes as a result.

Microsoft IT took a three-phased approach to Helpdesk awareness:

* **Readiness training.** Microsoft IT developed training materials for Helpdesk technicians that contained the key differences between Internet Explorer 9, and previous versions of Internet Explorer. The training included information about the new features introduced in Internet Explorer 9 and a troubleshooting guide. The troubleshooting guide contained tips and tricks on how to resolve common issues, such as how to find missing favorites.
* **Dedicated support model.** Internet Explorer 9 dogfood testing had a dedicated group of Microsoft customer support technicians, including Helpdesk, Tier 1, and Tier 2. This well-defined structure enabled Microsoft IT to handle any end user support issue.
* **Ongoing support process.** As issues arose, Microsoft IT modified existing Knowledge Base (KB) content, and created new KB articles.

User Awareness

User awareness and education are also critical to deployment success. Microsoft IT provided a Microsoft SharePoint® 2010 site that contained the application compatibility status of most internal LOB applications. When a user received a deployment notification for the latest build of Internet Explorer 9, they could determine if they wanted to install, based on whether their applications were working in that build.

As a part of the effort to educate users, Microsoft IT provided users with online training, and a variety of self-help mechanisms, including Known Issues and FAQ pages.

Product Group Feedback

As a result of working closely with the product team on pre-release versions of Internet Explorer 9, top support issues were provided back to the product group and addressed in the product prior to the final release of Internet Explorer 9.

Deployment Process

Microsoft IT identified specific deployment goals for each phase of the Internet Explorer 9 release cycle. Table 2 depicts the specific goals.

Table 2. Software Release Phases and Deployment Goals

| Phase | Deployment goal |
| --- | --- |
| Beta | Deploy to 60,000 computers |
| RC | Deploy to 90,000 computers |
| RTM | Deploy to 120,000 computers by RTM+90 days\* |

\* RTM deployment is still in process and appears to be ahead of schedule.

A phased approach ensured a smooth deployment, as it enabled Microsoft IT to adjust their process and deployment packages as needed. Impact on both bandwidth and user support processes was minimized. The phased approach allowed Microsoft IT to identify and resolve issues early in the deployment, before a broader deployment.

Change happens at every stage of the deployment process. A successful deployment depends on implementation and adoption of a robust change request process. A Change Advisory Board was in place for the Internet Explorer 9 deployment. Each phase in the deployment exercised strong change management principles.

Deployment Methods

At each release phase, the deployment procedure was standardized. Right before the general availability for the build, Microsoft IT received the build from the Internet Explorer product group. Microsoft IT packaged that build for distribution. Microsoft IT then created their own SCCM package to deploy through the SCCM environment.

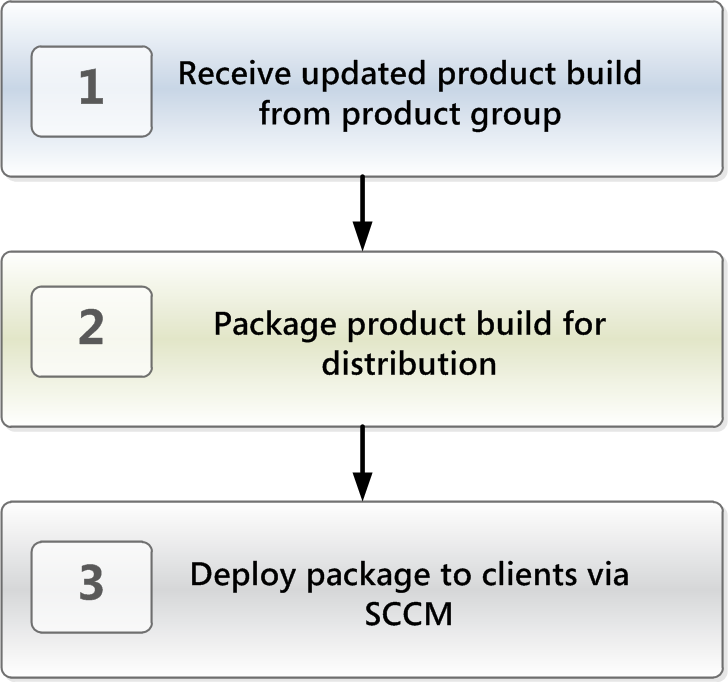


Figure 2. Deployment Process

Push Deployment

Microsoft IT uses SCCM for software patching and distribution. Both SCCM 2007 and SCCM 2012 Beta infrastructures were in place during the Internet Explorer 9 software deployment. To deploy the Internet Explorer 9 package, Microsoft IT built detection logic to identify and target the type of machine accordingly in both environments.

* 50,000 clients in the SCCM 2012 Beta environment
* 230,000 clients in the SCCM 2007 environment

Two types of packages were created. The packages included the end-user experience.

* **Optional.** For Internet Explorer 7 and Internet Explorer 8 users, the package allowed the user to install, cancel, or postpone. These options were necessary to accommodate machines that could be actively testing websites or applications with Internet Explorer 7 or Internet Explorer 8 at the time of notification.
* **Mandatory.** For all existing Internet Explorer 9 users, the package was mandatory.

Pull Deployment

Microsoft IT also enabled users to install Internet Explorer 9 independently. Users could connect to a shared software repository. Unlike the SCCM packages, users needed to provide system information, such as platform, edition, and language, to complete the installation.

For more information on deploying Internet Explorer 9, see “Using Software Distribution Tools to Install Internet Explorer 9” at <http://technet.microsoft.com/en-us/library/gg699427.aspx>.

## Ongoing Support and Maintenance

A supportability plan is a critical part of an effective deployment. The plan should include:

* Specifications on how the IT organization will collect information about all deployment issues as they occur. Examples include discussion forums, or email aliases set up for the deployment. The Internet Explorer 9 email alias was a key feedback channel for Microsoft.
* A mitigation plan, such as an internal website, which informs users of all known issues, and their workarounds
* Tips and tricks
* How-to articles
* Helpdesk incident rate monitoring processes

All of these elements help to raise user awareness and help users learn new and better ways to be productive. The plan components also help users to troubleshoot issues blocking their work.

### Collect Feedback

The Microsoft Supportability team is responsible for collecting deployment feedback and issues that occur during Helpdesk calls. The Supportability team delivered all feedback received through Helpdesk, distribution groups, discussion forums, surveys, and so on, to the Internet Explorer 9 product group. The product group could then use the feedback to help resolve Internet Explorer 9 issues. This is all part of the Dogfood program.

### Monitor Helpdesk

Microsoft IT uses an incident rate metric to understand the health of their Dogfood program. Incident rate monitoring helps to identify emerging trends within the support data, and gauge overall product health. The incident rate is a metric defined as a number of Helpdesk calls per number of installed clients. This is especially useful in piloting a pre-release deployment. For example, if you have deployed to 5,000 clients and the incident rate is high, this is an indication that the deployment should be suspended until the major known issues are resolved.

Incident rates also provide a health indicator of “how are we doing” on the adoption side and around the user experience.

The Internet Explorer 9 incident rate was much lower than the previous browser. The decrease can be attributed to improvements in the browser.

The incident rate for Internet Explorer 9 versus Internet Explorer 8 shows a 68 percent decrease in support rates, with twice as many installed clients.

* For Internet Explorer 9 RTM, with 107,000 users deployed, the current incident rate is 0.13 percent
* For Internet Explorer 8 RTM, with 51,000 users deployed, the incident rate is 0.19 percent

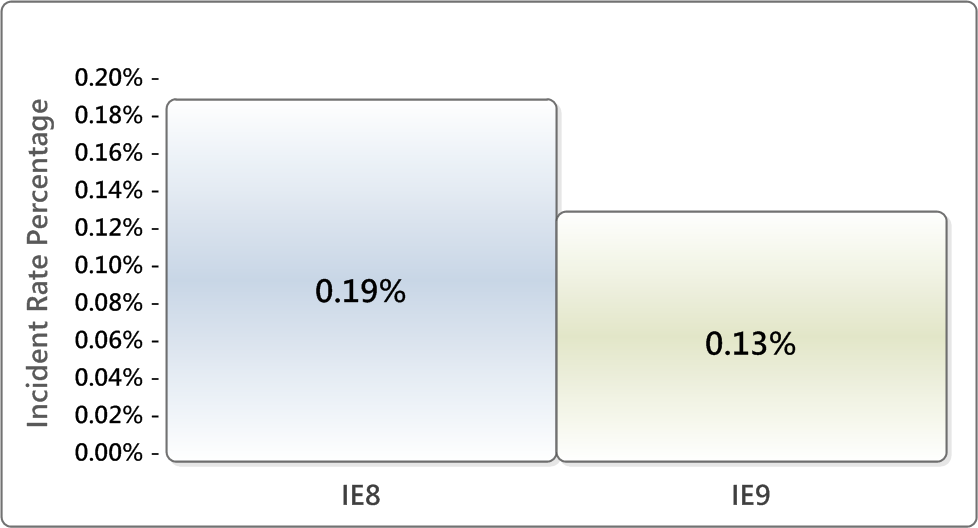


Figure 3. Change in Incident Rate

Evaluate Deployment Success

IT organizations learn from their deployments by determining if deployment goals were achieved.

For Microsoft IT, the goals for the Internet Explorer 9 deployment were to:

* Improve the product and user experience.
* Enhance user productivity by enabling users to experience the features and benefits of Internet Explorer 9.

Microsoft IT relied heavily on client satisfaction surveys to help judge deployment success. For example, during the RC deployment phase, Microsoft IT used the Internet Explorer 9 RC Client Satisfaction survey to evaluate the project. For eight business days, 4,429 Internet Explorer 9 RC users were randomly selected out of the then-70,000 user base to receive the survey. The survey asked the user to rate the product and their dogfood experience. During the Beta deployment, Microsoft IT sent out another survey to 2,314 users.

The survey feedback enabled Microsoft IT to identify areas of improvement that required attention before the start of the next milestone. This was true for product improvements before the release of Internet Explorer 9 RTM, as well as improvements to the dogfood program to help drive the smooth delivery to Microsoft users worldwide.

Note: Microsoft IT is still deploying Internet Explorer 9 RTM and at the time of this writing, final survey data was not yet available.

## Product Feedback

Improvements to features such as the Download Manager, Pinned Sites, and Tab Tear-off between the Beta and RC deployments showed that the dogfood program was helping to drive product improvements and enhance user productivity.

Responses from Microsoft users to an internal product survey indicated that satisfaction with the browser improved as the product team addressed the feedback that users provided. The feedback helped Microsoft IT determine that they were meeting their deployment goals.

## Dogfood Program Feedback

Another important goal is to determine if the deployment process itself is a success, or needs improvements. In a phased deployment, this evaluation can occur during each phase, which provides the opportunity to implement process improvements before proceeding to the next phase.

Microsoft IT received 134 unique responses to the survey question, *“If you could change anything with the Internet Explorer 9 dogfood program, what would it be?”* Responses from the RC deployment phase showed that users wanted improvements in the communication framework. They requested better education channels to understand what applications will and will not work with Internet Explorer 9, an improved means for sending feedback, a delivery mechanism that enabled them to opt-out, and better milestone notifications.

The feedback helped Microsoft IT identify areas of improvement and continue to refine their process as they progressed through the subsequent phases of the deployment. It also provided valuable feedback to help improve future dogfood deployments.

Microsoft IT received 192 unique responses to their survey question*, “What are your overall thoughts and comments on the Internet Explorer 9 dogfood program?”* Responses were positive, indicating a good experience in both the process and overall satisfaction with Internet Explorer 9 RC.

## Lessons Learned

Testing and user feedback on a milestone-by-milestone basis are invaluable for providing checkpoints for deployment success and determining areas that need improvement. From the Internet Explorer 9 deployment, Microsoft IT learned the following:

* Application compatibility testing improved user satisfaction and overall product quality. The goals for the Beta and RC phases were to provide feedback to the product group to help identify and resolve any compatibility issues.
* Well-defined, smooth processes, and automated tools enabled Microsoft IT to deliver Internet Explorer 9 RTM ahead of the milestone goal. The RTM goal was to deploy to 120,000 computers by RTM+90 days. At RTM+30 days, 107,000 computers were deployed.
* A strong communication plan that provided Helpdesk and user awareness drove lower Helpdesk incident rates. During the Beta phase, incident rates were 2.63 percent. During RC, they dropped to .20 percent. For the RTM deployment, the incident rate is 0.13 percent.

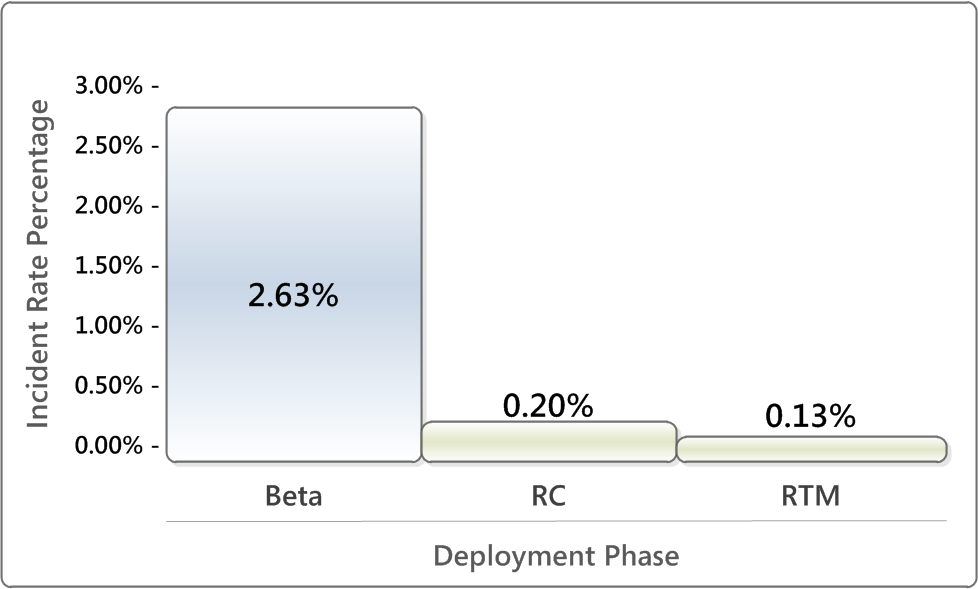


Figure 4. Helpdesk Incident Rates

Best Practices

Microsoft IT learned that the following best practices could help ensure that IT organizations are more successful in their Internet Explorer 9 deployment:

* **Use a phased deployment approach to ensure a smooth deployment**. Issues can be identified, processes and deployment methods can be adjusted, and both bandwidth and user support impact is minimized.
* **Try to anticipate the top client issues, and address those issues in advance**. Use companywide communication mechanisms, such as email aliases, discussion boards, and deployment websites, to help discover issues.
* **Identify and maintain a centralized list of critical LOB applications**. Consider maintaining an inventory of the critical web sites, LOB applications, and services that your customers need, Ensure that they all work with Internet Explorer 9 before you deploy to minimize the impact to your customers.
* **Take advantage of virtualization technologies during application compatibility testing**:
* Preconfigure VM clients through Windows Server 2008 R2, and use Hyper-V to host the VM clients. This significantly reduces hardware management complexity. It eliminates the need to maintain multiple client computers of varying ages through the hardware lifecycle, and allows IT Pros to focus on testing on a small set of servers.
* Assign, manage, and recycle VMs through SCVMM. This management tool enables you to increase the speed of testing by reducing the time it takes for test teams to get started. Also, using SCVMM reduces support calls for unrelated issues.
* **Train Helpdesk technicians on the new features before deployment**. Have training and support content ready, especially to address issues discovered during application compatibility testing. Application compatibility issues will generate the most Helpdesk support calls. A well-prepared Helpdesk staff can significantly save costs for the company by helping employees remain productive during and after the deployment.
* **Educate users**.
* Create a FAQ for employees, and include known issues with an estimated resolution time.
* Provide application compatibility status to help users determine the impact of deploying Internet Explorer 9.
* Create an internal website that makes content about the new features readily available to all employees, including information about how the new version will help increase their productivity.
* **Continuously monitor issues as they arise, then document and publish resolution.** For example, publish Knowledge Base articles to facilitate Helpdesk technicians with the quick resolution of support calls.
* **Use information gained from helpdesk calls as feedback for creating self-help support tools**. For example, publish tips and tricks on how to resolve common issues.
* **Plan deployments around IT business parameters**. Consider important business events, such as scheduled patches and updates, to minimize user experience impact.

Conclusion

The early deployment of Internet Explorer 9 included diverse groups, including Microsoft IT, the Internet Explorer product group, LOB application developers, and Microsoft employees across the global enterprise. Constructive feedback from Microsoft employees helped the Internet Explorer product group make numerous enhancements, and ultimately helped to produce a higher-quality product.

Due to the careful planning and cross-team effort, as well as the technical savvy and eagerness of Microsoft employees, early adoption of Internet Explorer 9 was a success.

Early adoption helped validate the functionality and features of Internet Explorer 9, in addition to the tools and processes used during deployment. It also facilitated the compatibility testing of all LOB applications that are dependent on a Microsoft web browser. Communicating known issues resulted in lower Helpdesk call volumes.

The Microsoft IT experience reinforced lessons learned from previous Dogfood efforts. The deployment also realized significant efficiency and cost reduction by using publicly available versions of Windows Server 2008 R2, Hyper-V, and SCVMM.

The successful testing of the deployment in a real-world environment offers valuable lessons for IT customers and solution partners. They can simplify the process and reduce the costs associated with planning and conducting an Internet Explorer 9 deployment.

For More Information

For a related article on the Internet Explorer 9 deployment at Microsoft, see Microsoft IT Tests Line of Business Application Compatibility for Internet Explorer 9 at  
<http://technet.microsoft.com/library/gg981681.aspx>

For more information about the LOB application testing methodology used by Microsoft IT, see <http://download.microsoft.com/download/4/e/8/4e8c1b99-54f1-4be7-8e9b-78024015848d/LOBApplicationCompatibilityTesting_TWP.doc>.

To learn more about the top new Internet Explorer 9 features, see the Beauty of the Web website at [www.beautyoftheweb.com](http://www.beautyoftheweb.com).

For the best source of technical information about Internet Explorer 9:

* Visit the Internet Explorer 9 site for IT Pros at <http://technet.microsoft.com/en-us/ie>
* Review the Internet Explorer 9 - Product Guide for IT Professionals <http://technet.microsoft.com/en-us/library/gg619384.aspx>
* Review the Internet Explorer 9 Deployment Guide <http://technet.microsoft.com/en-us/library/gg699432.aspx>

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