

Best Practices Help Minimize Microsoft Windows* 8 Migration Costs

We estimate it will cost less to migrate to Windows*8 compared with Windows 7. Also, we have developed a foundation of best practices and expertise that will help keep migration costs low.

Executive Overview

Moving from Microsoft Windows* 7 to Windows 8 meets Intel's long-term client computing needs, gives employees more powerful systems, and prepares them to use Intel's growing number of touch-enabled applications. Also, we estimate it will cost less to migrate to Windows 8 compared with Windows 7.

Intel IT is rapidly moving ahead with migration to Windows 8, based on our expectations of the following benefits:

- Improved employee productivity
- Reduced risk of having to prematurely replace platforms
- Support for emerging input methods such as voice, gesture, and perceptual computing
- A continued commitment to supporting consumerization
- Ability to take advantage of our PC OS investment on tablets and other form factors, and provide a consistent OS experience across devices

By end of June 2013, Windows 8 will be the standard OS for business Ultrabook™ devices and Intel® architecture-based tablets in use at Intel.

We have estimated the overall costs for migrating from Windows 7 to Windows 8, based on working assumptions and proof-of-concept results. Compared to migrating from Windows XP* to Windows 7, our estimates show that migrating from Windows 7 to Windows 8 will not be overly difficult or expensive, mainly because of the high level of application compatibility between Windows 7 and Windows 8. We also have developed a foundation of best practices and expertise during previous migrations that will further reduce migration costs.

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BACKGROUND

Intel's computing environment is undergoing a period of rapid change. We are deploying Microsoft Windows* 8, a new OS with a transformational new UI. We are also deploying new hardware and form factors, such as convertible and detachable business Ultrabook™ devices, and beginning to transform our enterprise applications to take advantage of touch capabilities. We are looking forward to bringing these new technologies and capabilities to Intel.

The strategic decision to move to a new OS depends heavily on the expectations of a long-term benefit, both in terms of productivity and the overall cost and return on investment. After careful analysis, Intel IT is standardizing on Windows 8 as the primary OS for business Ultrabook devices and Intel® architecture-based tablets for the following reasons:

- Based on our testing, Windows 8 offers substantial employee productivity benefits, such as faster start times, improved battery life, and better responsiveness.¹
- Windows 8 enables enhanced information security through hardware-enhanced security features built into business Ultrabook devices. These features include secure boot through the Unified Extensible Firmware Interface, Intel® Anti-Theft Technology, and Intel® Identity Protection Technology.

¹ For a detailed discussion of the benefits offered by Windows* 8 and Intel's deployment strategy, see "Deploying Microsoft Windows* 8 in the Enterprise," January 2013.

- Our analysis of Intel's future computing environment over the next two to three years shows that touch interaction—and eventually additional alternative input methods such as voice, gesture, and perceptual computing—will become increasingly important. Therefore, we are accelerating our deployment of touch-enabled business Ultrabook devices running Windows 8. By deploying Windows 8, with its focus on touch, we can avoid the risk of having to prematurely replace platforms and address the corresponding increase in early refresh expenses.
- Since 2009, Intel IT has supported consumerization through our bring-your-own-device programs. To advance these programs, we continually look at the bring-your-own devices our employees want to use in the enterprise. Currently, there is a growing demand for tablets, touch-enabled business Ultrabook devices, and touch-enabled applications. We believe Windows 8 will enable us to provide a consistent OS experience across a wide variety of devices as well as support a growing demand for touch capabilities.
- After establishing that moving from Windows 7 to Windows 8 met our long-term client and consumerization strategy, we evaluated the migration costs for moving from Windows 7 to Windows 8. Our estimates show that we can gain the benefits of Windows 8 in a cost-efficient manner.

MINIMIZING COSTS ASSOCIATED WITH MIGRATING TO MICROSOFT WINDOWS* 8

An OS migration involves three primary cost vectors: migration readiness, deployment, and sustaining. As the arrows in Figure 1 show, the primary cost vector changes over time. When migration starts, most of the cost is associated with migration readiness. As we achieve greater readiness, the cost vector shifts to deployment. Eventually, when deployment is complete, sustaining costs become the primary cost vector.

As shown in Figure 2, during our migration from Windows XP* to Windows 7, migration costs, such as migration readiness and deployment costs, were more than offset by the lower sustaining costs of Windows 7 compared to Windows XP.

We expect that the overall migration cost for Windows 8 will be even lower than for our Windows 7 migration. Although we estimate Windows 8 sustaining costs will be approximately the same as they are for Windows 7, the high level of application compatibility between Windows 7 and Windows 8 means that most existing enterprise applications will be compatible with

the new OS. Also, we are using a different, more cost-effective deployment strategy for Windows 8. Finally, we have developed a foundation of expertise and best practices during previous migrations, which will further help keep migration costs low. The following sections describe the three main cost vectors for our Windows 8 migration and the associated best practices.

Migration Readiness Costs

Migration readiness costs consist of the initial activities associated with evaluating and preparing for a new OS. These activities include application readiness and preparing technical support staff and end-user training materials. In our experience, application readiness represents the largest portion of migration readiness costs. We are using the best practices that we developed during our migration from Windows XP to Windows 7,² but we have adapted these best practices as necessary to accommodate new requirements and Windows 8 features.

For example, although the Windows 7 and Windows 8 UIs are quite different, at the OS level there is little change from Windows 7 to Windows 8, which makes application compatibility between the two OSs easier. Although we still require mandatory testing

² See "Best Practices for Migrating a Large Enterprise to Microsoft Windows 7*."

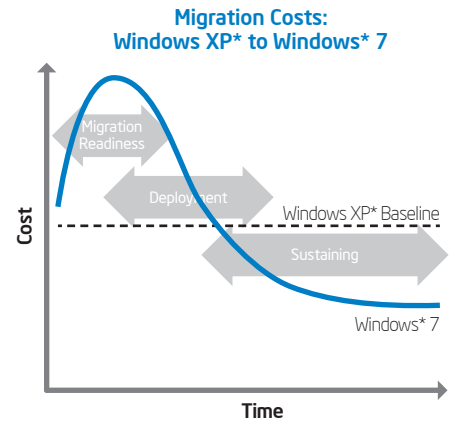


Figure 2. Our experience shows that the overall cost of migrating from Microsoft Windows XP* to Microsoft Windows* 7 was lower than the incremental savings associated with sustaining costs; we expect the migration cost for Microsoft Windows 8 to be even lower.

Primary Cost Vectors

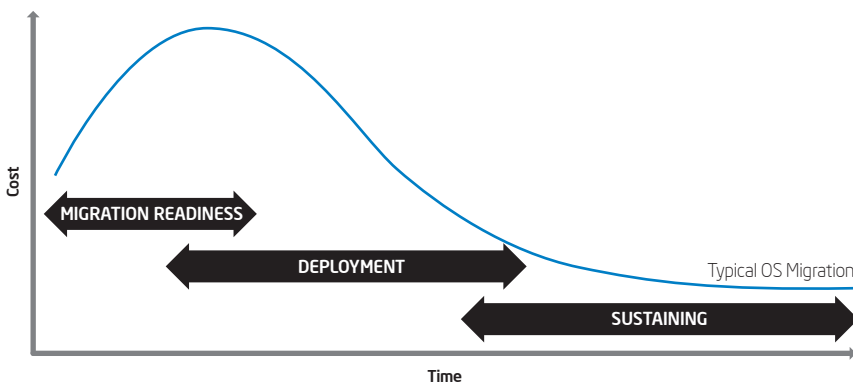


Figure 1. During an OS migration, the primary cost vector changes over time. Note: OS cost will eventually increase as the OS approaches its end-of-life or the end of support, because of increased independent-software-vendor cost and extended support.

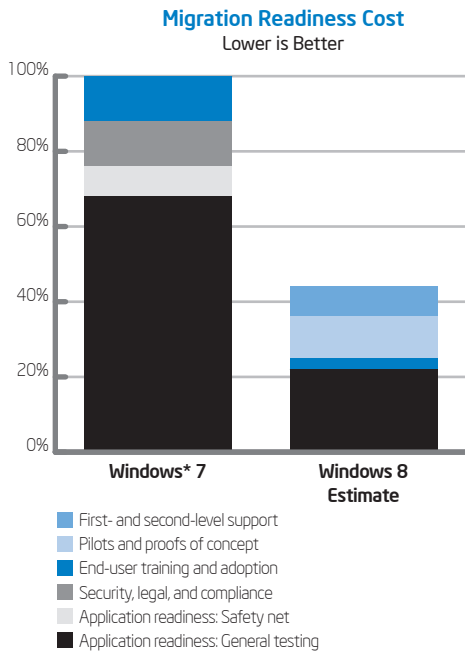


Figure 3. Overall migration readiness costs for Windows* 8 are 55 percent lower than for Windows 7. Contributing to the lower cost is our ability to reuse existing virtualization and security infrastructure.

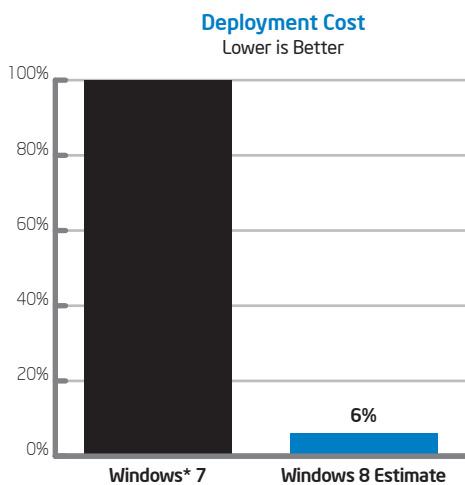


Figure 4. We are deploying Windows* 8 primarily through regular hardware refresh and investigating in-place migration to help speed adoption. Therefore, we anticipate the Windows 8 deployment costs will be much lower than the costs for Windows 7 deployment.

of all enterprise applications, our test results have shown that more applications work properly on Windows 8 and Internet Explorer* 10, compared to the results of similar testing during our migration from Windows XP to Windows 7. We anticipate that this increased application compatibility will reduce our application readiness costs. For web-based applications, Internet Explorer 10 in Desktop mode is our recommended browser for enterprise users. It is mandatory that applications are tested in Internet Explorer Desktop mode and optional for Internet Explorer 10 Modern UI mode. Testing in Internet Explorer 10 Desktop mode and testing support of touch capabilities are the most substantial application readiness areas for Windows 8.

Other areas of cost when preparing for migration include the following:

- Testing new platforms to verify they meet our security, legal, and compliance requirements, as well as testing and updating tools to assist with eDiscovery
- Purchasing training materials for our first-level and second-level support staff
- Creating end-user training – to reduce costs, we use online and social media venues

As shown in Figure 3, we estimate that overall migration readiness costs for migrating from Windows 7 to Windows 8 will be 55 percent less than the migration readiness costs incurred when we migrated from Windows XP to Windows 7.³

Deployment Costs

We have over 2,000 Windows 8 users to-date and expect 15,000 by the end of the year. We are actively compiling deployment data, and we estimate that deployment costs will be significantly less for Windows 8 than for Windows 7, as shown in Figure 4. One reason for this lower cost is that we are using a different, segmented deployment strategy. Our

Windows 7 migration was highly accelerated; our goal was to migrate the entire company in a specific period of time, much faster than our PC refresh pace. We migrated nearly all PCs within a 24-month time span and also added Intel® Solid-State Drives and whole-disk encryption to our standard platform. Although we plan to make Windows 8 generally available six weeks earlier than for Windows 7, we are following the refresh cycle and allowing end-user choice for the entire migration, which as a result could span the next four years. We are also investigating the use of in-place migration (IPM), which is a method of upgrading Windows while leaving data and applications intact. Adding IPM to our deployment strategy will help speed the adoption of Windows 8 across the enterprise while avoiding an increase in the IT support staff's workload.

Sustaining Costs

We estimate the sustaining costs for Windows 8 to be about the same as those for Windows 7, based on the following reasons:

- **Stability.** The proof of concept and testing results indicate that Windows 8 is highly likely to be as stable as Windows 7.
- **Legacy Desktop UI.** Windows 8 offers the Desktop UI, which is similar to Windows 7's UI. This UI can allow employees to use Windows 8 in a familiar environment while gaining experience with new touch-enabled applications that use the Modern UI—all in the same OS.
- **Technical Assistance Center (TAC) experience.** During the early phases of migration to Windows 8, we used online community support options; we have provided official TAC support only during the most recent phase. Because we did not receive a surge of issues from early adopters, we believe users can transition easily from Windows 7 to Windows 8 with minimal technical support issues. Now that we have official TAC support, we are validating our estimates before the general availability of Windows 8 in June.

³ Both Windows* 7 and Windows 8 application readiness efforts build on previous efforts of application owners (Intel employees); this work is not included in our calculations.

BEST PRACTICES FOR REDUCING WINDOWS 8 MIGRATION COSTS

In our experience, one way to minimize OS migration costs is to reuse and adapt best practices from previous migration efforts. The following sections summarize some of the migration readiness and deployment best practices we have developed.

Migration Readiness

The following best practices have helped us reduce migration readiness costs.

1. **Plan early for application readiness testing.** We identified application owners for our 3,000 enterprise applications and included them in planning, communicated testing expectations early, and used a phased approach to schedule their test cycles. We assembled several solutions for application testing and made them available to the application owners, such as by using virtual machines (VMs), loaner systems, and migrating existing PCs.
2. **Develop a process for tracking application testing progress.** At the time of publication of this paper, 61 percent of our enterprise applications are certified on Windows 8 and Internet Explorer 10, while only 4 percent are in remediation. About 85 percent of our applications will be tested for Windows 8 readiness by Q3 of 2013. Some testing will continue through the first half of 2014, for certain applications that are dependent on suppliers that are not releasing Windows 8 versions until then. We publish the application testing results, so employees can validate whether applications they use are certified on Windows 8 before they decide to migrate.
3. **Develop a process for requesting, tracking, and deploying PCs to application testers and early adopters.** Application testers are able to choose between four options for a Windows 8 PC: a short-term loaner (two weeks), a long-term loaner (six months), a VM (up to two weeks), or they can migrate their existing system if it is compatible with our Windows 8 build.
4. **Use existing virtualization infrastructure for a safety net.** If an application fails one of the test scenarios, it is tested in alternative environments, such as in a different browser or on a virtualization solution. Because we have an existing virtualization infrastructure, there is no additional cost for implementing the safety net.
5. **Proactively prepare the ecosystem, such as platforms, security, and support models.** We certified as many platforms as possible so early adopters could participate. We also engaged our security team early because their requirements take time to implement.
6. **Plan ahead to minimize licensing fees.** We determined the versions of Windows 8 that we intended to support and planned how we could verify that devices adhere to minimum OS specifications. To meet Intel's security and manageability requirements, we standardized on Windows 8 Enterprise for IT-issued laptops and Windows 8 Professional on bring-your-own devices and tablets. Because we started our deployment before many suppliers offered tablets with Windows 8 Pro, we purchased Pro upgrade license keys for our early adopters.
7. **Begin training support staff early.** To speed the migration of Windows 8, we offered early adopters of Windows 8 online community support, while at the same time training our support staff. Inexpensive to create, online community-based resources such as forums and other social-media-based training often enable users to find answers quickly without calling the TAC.

Deployment

The following best practices have helped us reduce deployment costs.

1. **Develop a gradual deployment plan starting with users tolerant of risk and communicate the plan widely.** We implemented a four-phase migration plan over seven months, and expect to have 15,000 Windows 8 users by the end of 2013.
 - **Phase 1** - Pilot early adopters. Four hundred employees participated in our initial pilot early adopter project. These employees ranged from office workers and developers to executives across multiple divisions. They used Windows 8 on a range of devices.
 - **Phase 2** - Application developers and early adopters. This phase included 600 application developers and testers involved in the application readiness process, as well as 250 employees who wanted to migrate to Windows 8 as an early adopter using their existing systems that were compatible with our early adopter build.
 - **Phase 3** - Standard PC refresh option. We offer Windows 8 as an option in our standard PC refresh process. New employees and employees who are receiving new PCs through the

Deploying Windows* 8 on Intel® Architecture-based Tablets at Intel

Intel IT recently conducted a successful proof-of-concept (PoC) using Intel® Atom™ processor-based tablets with Windows* 8 across our enterprise. We found that employees were pleased with the ability to use a tablet to access enterprise applications.

The PoC survey found the following results:

- 80 percent of employees reported an increase in flexibility
- 57 percent of employees reported an increase in their productivity
- Employees generally used the tablet to consume, not to create, content
- Employees generally used the tablet as a companion device, not a primary device

Based on information from this evaluation, we plan to continue to drive a broader roadmap for Intel® processor-based tablets and Windows 8. We see great value in supporting Intel Atom processor-based tablets with Windows 8 in our enterprise.

regular refresh cycle have the option of Windows 7 or Windows 8 on their primary PC (laptop, business Ultrabook device, desktop PC, or tablet with an Intel® Core™ vPro™ processor). By introducing Windows 8 now through refresh, we can migrate a large number of users with no incremental effort, saving time and money in the long-term.

- **Phase 4** – Standard on business Ultrabook devices and an option on other devices. Windows 8 will become the standard-issue OS for business Ultrabook devices and most of our 2013 PC refresh will be to Windows 8. Employees choosing a form factor other than a business Ultrabook device at refresh will have the option of Windows 7 or Windows 8. Employees with older systems who want to upgrade from Windows 7 will have the option, but the upgrade will not be required.
- 2. Use low-cost materials, community forums, and websites to train users.** We are using a combination of materials, including email, newsletters, short videos, a website with quick how-to tips, printable job aids, a social media platform where employees can discuss issues and share information, a decal on the laptop with the training website URL, and shortcut icons on the desktop. We are also developing a Modern UI application with an RSS feed for Windows 8 tips extracted from our existing materials. A three-part series of communications with links to videos, beginner tips, and advanced tips help new users quickly transition to Windows 8.

- 3. Inform employees about the deployment.** We have an extensive communications plan to make employees aware of our Windows 8 deployment strategy and progress. For example, we publish articles on our enterprise intranet and in our digital newsletter, informing employees about our plans involving Windows 8.
- 4. Plan for system deployment to support staff.** We determined how many first-level support TAC agents would need to have Windows 7 and Windows 8 systems as well as Windows 8 tablets in order to support users. Then we migrated in-stock systems to Windows 8 for these agents to avoid additional costs of new systems. We did, however, purchase new touch monitors for these TAC agents.

NEXT STEPS

We are pursuing other upgrade options such as IPM and upgrading systems when an end user brings a PC to a service center for a hardware or OS issue.

Other plans related to our migration to Windows 8 include the following:

- Enable the touch and gesture ecosystem for new high-value applications (for example, see the sidebar for a discussion of deploying tablets at Intel)
- Continue to measure migration costs
- Iteratively improve the OS transition experience for employees

CONCLUSION

Several factors motivated us to migrate from Windows 7 to Windows 8 and make Windows 8 the primary OS for business Ultrabook devices and Intel architecture-based tablets. We see Intel's client computing ecosystem increasingly using touch and other alternative input methods. Migrating to Windows 8 lets us prepare for that future and avoid the risk of premature platform obsolescence. Also, Windows 8 offers productivity benefits, enhanced information security, and reinforces our support of IT consumerization.

Intel's computing environment is undergoing rapid changes. We are deploying a new OS with a transformational new UI; at the same time we're deploying new hardware and form factors such as convertible and detachable business Ultrabook devices, and beginning to transform our enterprise applications to take advantage of touch capabilities.

Migrating from Windows 7 to Windows 8 will be made easier, both in terms of time and

cost, by the significant amount of application compatibility between Windows 7 and Windows 8. In addition, best practices that we have developed during previous migrations will help further reduce migration costs, compared to migrating from Windows XP to Windows 7. These combined factors are enabling us to gain the benefits of Windows 8 in a cost-efficient manner.

ACRONYMS

IPM	in-place migration
PoC	proof of concept
TAC	Technical Assistance Center
VM	virtual machine

FOR MORE INFORMATION

Visit www.intel.com/it to find white papers on related topics:

- "Accelerating Deployment of Touch-Enabled Ultrabook™ Devices"
- "Deploying Microsoft Windows* 8 in the Enterprise"
- "Evaluating Microsoft Windows* 8 Security on Intel® Architecture Tablets"
- "Preparing the Enterprise for the Impact of Alternative Form Factors"

For more information on Intel IT best practices, visit www.intel.com/it.

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