IT@Intel White Paper

Intel IT
IT Best Practices
Windows* 8
January 2013

Deploying Microsoft Windows* 8 in the Enterprise

Windows* 8 on Intel® architecture-based devices enable users to perform both touch and traditional client-based computing on a single device that is well optimized for performance, mobility, security, and long battery life.

Executive Overview

Intel IT is standardizing on Windows* 8[1] as the primary operating system for business Ultrabook™ devices and Intel® architecture-based tablets. We are accelerating the deployment readiness for business Ultrabook devices and tablets, and intend to make the new OS available for laptop and desktop PCs. Our plan is based on six months of extensive analysis and testing of Windows 8, including a pilot of over 300 users. For the deployment of Windows 8, we will utilize previous experience from our global enterprise migration to Windows 7, completed in 2011.

Not just a traditional OS update, Windows 8 represents a significant shift in device interaction, focusing on touch. Windows 8 combines mainstream enterprise client computing and a touch-driven experience on a single platform. Based on our testing, we believe that this combination can best be realized on Intel® architecture-based devices that enable users to perform both touch and traditional client-based computing on a single device. Benefits of Windows 8 on Intel architecture include the following:

- Faster start times
- Improved battery life
- Better responsiveness
- Improved connectivity
- Enhanced security
- Potential for taking advantage of sensors installed on a device

Our four-phased deployment will start with needs-based and bring-your-own-device early adopters, eventually growing to become a standard PC refresh and OS upgrade option for all employees.

[1] Windows 8 Enterprise edition will be used for the standard IT build, and Windows 8 Professional will be an option for certain use cases (see Windows* 8 Versions in Use at Intel sidebar for more information). Throughout this paper, we will use the term "Windows 8" when referring to both versions, unless more detail is required.

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Windows* 8 Versions in Use at Intel

We chose the Windows 8 Enterprise edition for our standard IT build because it supports the widest range of enterprise-level OS capabilities and features.[§] For a detailed discussion of Windows 8 Enterprise, refer to www.microsoft.com/en-us/windows/enterprise/products-and-technologies/windows-8/enterprise-edition.aspx.

Other versions of the new OS have their place at Intel as well. For example, because Windows 8 Professional supports many of the same built-in security features as Windows 8 Enterprise—especially domain join capability and in some cases encryption support—Windows 8 Professional will be the minimum requirement on bring-your-own (BYO) PC systems at Intel that require enterprise integration inside the network.

Intel® Architecture-based Tablets Provide the Best Windows* 8 Value Proposition

Devices that can run Windows 8 and devices that run Windows RT are distinctly different. Only tablets featuring x86-based processors, such as Intel® Atom™ processors and Intel® Core™ processors can run Windows 8. Tablets that are sold with Windows RT are not upgradable to any other version of Windows 8.

At Intel, the value proposition of Windows 8 is an upgrade path for enhanced security and legacy application compatibility, in addition to the ability to integrate, manage, and secure devices within the Intel network. Because Windows RT does not currently enable us to manage or encrypt devices sufficiently to meet our enterprise security requirements, devices accessing even basic services such as email, contacts, and calendar will be required to run Windows 8 Professional, not Windows RT.

[§] Windows 8 Enterprise will be the standard IT build, and Windows 8 Professional will be an option for certain use cases. Throughout this paper, we will use the term "Windows 8" when referring to both versions, unless more detail is required.

BACKGROUND

In 2011, Intel IT completed the transition of our PC fleet to Microsoft Windows* 7. While we continue to benefit from the stability, responsiveness, and improved security that Windows 7 provides, our continual push to improve the user experience, coupled with the possibility of making touch-based computing mainstream in the enterprise prompted us to accelerate our evaluation of Windows 8. Following our standard six-month OS evaluation process, we have concluded that the full benefits of Windows 8—which include touch, security improvements, responsiveness, and battery life—are best realized on business Ultrabook™ devices and Intel® architecture-based tablets. Utilizing our experience from the recent migration from Windows XP* to Windows 7, we are rapidly preparing Intel's computing environment to widely deploy business Ultrabook devices and tablets with Windows 8 beginning in March 2013.

Our evaluation of Windows 8 began with a thorough feature assessment and extensive testing of the OS on both IT-provided and bring-your-own devices (BYOD). Testing was performed on touch and non-touch devices, including business Ultrabook devices, tablets, and laptop PCs. Our evaluation included verifying the business value and testing the integration of Windows 8 within our IT support structure, including conducting a pilot project with more than 300 participants.

Based on the results of this evaluation, we expect that Windows 8, combined with new PC designs and capabilities, will increase the mobility and thus the productivity of our employees. Also, Intel's technically savvy and early-adopter employees will be able to take advantage of Windows 8's new capabilities, using PCs in ways they've never used them before. We encourage Intel employees to be early adopters because they help IT adopt technology more quickly, assist other users, and speed the development of Intel® products by taking advantage of the most up-to-date and productive technology.

Not merely an OS update, Windows 8 represents a truly new technology and a major shift in computer interaction—moving from traditional keyboard-mouse to touch. The most visible change is the new user interface, which Microsoft calls "Modern User Interface" (Modern UI).[2] During our evaluation and testing of Windows 8, we found that a touch-based interface was well-suited to mobile job roles at Intel. The benefits of Windows 8's Modern UI are best realized with touch interaction, such as that provided by touch-based business Ultrabook devices and Intel architecture-based tablets. (Although the features of the Modern UI are designed around the touch-screen experience, the traditional Windows interface is still available.)

[2] Pre-release versions of this were called "Metro UI."

ENTERPRISE BENEFITS OF WINDOWS 8 AND INTEL ARCHITECTURE-BASED, TOUCH-ENABLED DEVICES

With the introduction of touch platforms, enterprise computing can now make significant strides in addressing mobile productivity challenges in various work roles. The compelling fact is that a single OS can provide both the convenience of a compute platform while at the office, as well as a sleek form factor device that facilitates easy information consumption and touch transactions on the go.

When combined with Intel architecture-based devices, Windows 8 can help Intel employees enhance their productivity in several ways:

- **Faster start times, improved battery life, and better responsiveness.** Our early testers reported a 30-percent improvement in the time it takes to start their Windows 8 systems, as well as improvements in the length of time a battery charge lasts and how responsive the system is compared with Windows 7.
- **Dynamic desktop provides real-time information.** Dynamic tiles can replace normal shortcut icons on the desktop. For example, an RSS feed tile will display recent news articles. The dynamic desktop provides better connection with colleagues, faster collaboration, and can improve decision making by offering more choices for interacting with the device, in the right context, and with a richer UI.
- **Improved connectivity.** For Intel's highly mobile workforce, features such as Microsoft Connected Standby and Intel® Smart Connect Technology, seamless roaming, and near-field communications support are critical for maintaining connectivity and productivity anywhere, any time.
- **Enhanced security.** Hardware-enhanced security features built in to Ultrabook devices with Intel® Core™ vPro™ processors include Intel® Anti-Theft Technology and Intel® Identity Protection Technology. Windows 8 with Unified Extensible Firmware Interface supports a secure boot that will reduce or eliminate the risks that rootkit threats pose.
- **Potential for taking advantage of sensors.** Increasingly, OEMs are adding features commonly found on smartphones, such as sensors and near-field communication (NFC) chips to extend the capabilities of PCs. Some of the new devices will support payment and authorization through NFC. In addition, location and environmental sensors provide additional context for a new set of rich context-based applications and location-based services.[3]

With their new capabilities (see Ultrabook™ Devices for Business sidebar), Intel architecture-based tablets and business Ultrabook devices are able to take advantage of Windows 8 features making the two a natural combination.

[3] See "Getting a Headstart on Location-based Services in the Enterprise."

Ultrabook™ Devices for Business

As described in the white paper, "Evaluating Ultrabook™ Devices for the Enterprise," Intel IT determined that business Ultrabook devices offer significant advantages for employee productivity, and we have decided to make these devices an option for all employees during our normal PC refresh cycle, starting in 2013.

Business Ultrabook devices deliver enhanced user mobility without sacrificing enterprise security capabilities and when combined with Windows 8, can help meet Intel's current and future business requirements. Business Ultrabook devices provide the stable, predictable footprint IT needs, while meeting employees' desire for a sleek, highly portable device. The business Ultrabook device form factor lends itself to new workplace usages, serving as the center of a multi-device, touch-enabled user model to best take advantage of Windows 8. For example, the business Ultrabook convertible is two devices in one, easily switching from a laptop to a tablet, giving employees the right tool for the right task while reducing the number of devices IT needs to manage and maintain.

Business Ultrabook devices feature long-lasting battery life, instant-on capability, and a sleek form factor, making them a natural choice for Intel's highly mobile workforce, as well as for the office environment. In addition, Intel architecture-based business Ultrabook devices' security capabilities, integration support, and rugged design are all suited to the enterprise computing environment.

- **Platform.** Business Ultrabook devices based on the Intel® Core™ vPro™ processor provide a fully manageable platform with a stable image across multiple releases and geographic regions. Responsive flash-based storage allows for whole-disk encryption while still maintaining performance. Other benefits include Intel® Rapid Start Technology, Intel® Smart Response Technology, and Intel® HD Graphics.
- **Security.** Manageability and security are built in to the platform. For example, Intel architecture-based business Ultrabook devices feature hardware-assisted encryption, Intel® Anti-Theft Technology, Intel® Identity Protection Technology, and the ability to remotely and securely manage the devices even if they are powered-off or disabled.
- **Integration.** Business Ultrabook devices include platform sensors, enterprise-class Wi-Fi*, and high-speed I/O.
- **Rugged Design.** Reliability and longevity are built in to business Ultrabook devices. For example, battery replacements, memory upgrades, and drive upgrades are more easily accomplished compared to consumer-level devices. These design features enable business Ultrabook devices to provide three-year warranties.

DEPLOYMENT PLANS FOR WINDOWS 8

Intel IT is moving quickly to make Windows 8 the standard OS for business Ultrabook devices (both touch-based and non-touch) and tablets in our enterprise environment. Eventually, Windows 8 will be a choice for employees with devices other than Ultrabooks and tablets.

To accelerate our deployment of Windows 8, we are applying key learnings from the now-completed Windows 7 migration. For example, coupling new hardware, such as Intel® Solid-State Drives, with new software can bring significant benefits to the enterprise, in terms of employee productivity, manageability, and cost efficiency. Also, because we have already performed a thorough evaluation of Windows 8, the risk associated with ramping quickly to meet business needs is small.

Three hundred employees participated in our initial pilot project, and we now have approximately 100 more early-adopters. These employees range from office workers and developers to executives across multiple divisions. They are using Windows 8 on a range of touch and non-touch devices such as business Ultrabook devices, tablets, and laptop PCs. We plan on adding another 1,500 Windows 8 users in early 2013.

Part of our Windows 8 deployment effort will include a thorough application-readiness process, using best practices that we developed during our migration from Windows XP to Windows 7.[4] We will adapt these best practices as necessary to accommodate new requirements and Windows 8 features.

[4] See "Best Practices for Migrating a Large Enterprise to Windows 7*."

Our Windows 8 deployment will progress in four stages, summarized in Figure 1 and discussed in the following four subsections. We anticipate that about 15,000 employees will have a Windows 8 system by the end of 2013. In terms of computing and work styles, we know that one size does not fit all. Therefore, as an underlying principle of our deployment strategy, we offer Intel employees many choices of hardware and software. As we progress through the four stages of Windows 8 deployment, we will work to ensure employees have access to the devices, applications, and operating system that make the most sense for their particular situation.

Phase 1: BYOD and Business-need Early Adopters

The first phase of deployment started in November 2012 with about 100 employees who expressed an interest in or a business need for an "Early Adopter Build" of Windows 8 on their primary PC. Some employees received upgrades on their IT-issued PCs. Others chose to join the BYO Primary PC program with Windows 8. Phase 1 also includes support for Windows 8 on tablets.

We consider this build suitable for employees willing to tolerate potential issues related to running beta version software. Instead of having Technical Assistance Center (TAC) or Service Center support, users in this phase will be self-supporting through our internal social collaboration platform.

Phase 2: Application Developers and Employees with Business Ultrabook Devices

Phase 2 will begin in early 2013 and target Intel application readiness developers and employees with a business need or strong desire for Windows 8 on touch-based PCs. This phase will include approximately 1,500 users such as application developers and testers involved in the application readiness process, as well as employees who wish to migrate to Windows 8 as an early adopter (either with their current business Ultrabook device or other platform that is supported by our early-adopter build).

Although TAC and Service Center support for Windows 8 is expected to be in place, the Phase 2 build will still be considered high risk because application readiness testing will be in progress. During this phase, we will also be conducting pilot projects with new business Ultrabook device designs that support touch.

Phase 3: Standard PC Refresh Option

In Phase 3, Windows 8 will become an option in our standard PC refresh process. At this point, new employees and employees who are receiving new PCs through the regular refresh cycle will have the option of a Windows 7 or a Windows 8 Enterprise build on their primary PC (laptop, business Ultrabook device, desktop PC, or tablet with Intel Core vPro processor). Because they offer the remote management, security, and collaboration support necessary for enterprise use, only systems with Intel Core vPro i5 processors will be used as primary PCs with standard IT builds.

Also in Phase 3, users of tablets with Intel Core processors or Intel Atom processors will be able to enroll in Premium Service (IT managed and with standard network access to all applications currently available on PCs) or Basic Service (access to email, calendar, and contacts). For a description of both services, see the Basic and Premium Service Offerings for Tablets Running Windows* 8 sidebar.

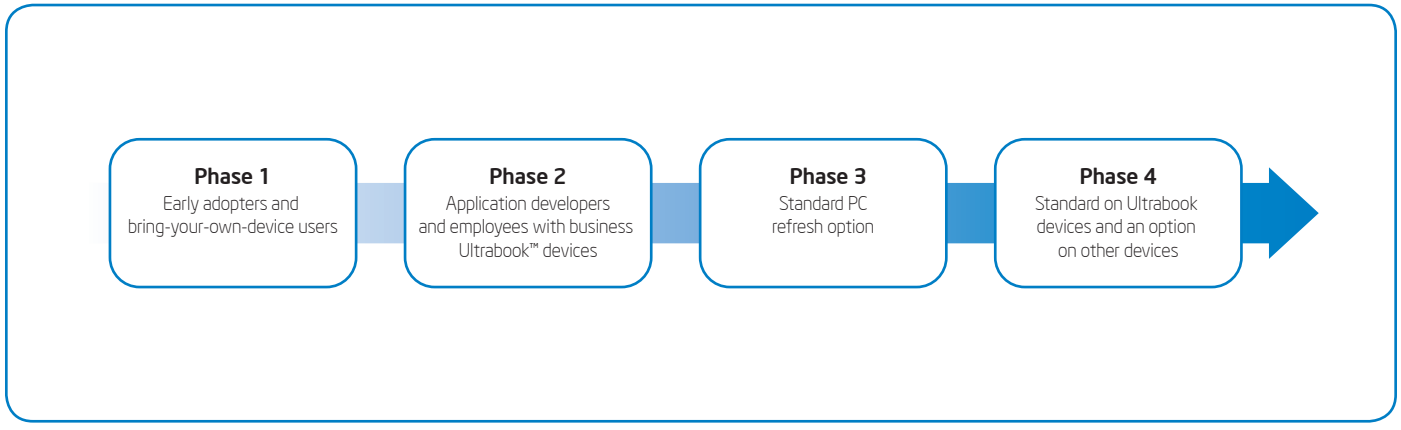

Figure 1. A phased deployment of Windows* 8 helps make a smooth transition to the new operating system.

Basic and Premium Service Offerings for Tablets Running Windows* 8

During Phase 1 of our Windows 8 deployment, we decided to provide access to an increased subset of Intel IT services through a new proof of concept (PoC) for bring-your-own and department-purchased tablets running Windows 8. We developed the PoC after key business units requested that companion tablets (an additional device for desktop and laptop users) be granted greater enterprise integration to increase productivity for specific mobile usages.

We now offer two service levels:

Basic service. This service level is equivalent to the current bring-your-own-device service offering and includes only email, calendar, and contacts access. Typically, the basic service is chosen by employees who use a tablet primarily for personal use, but also use it to connect with Intel to read email or check calendar appointments. Currently, the basic service offering is not available to devices running Windows RT due to device management limitations and the lack of encryption options.

Premium service. This new service includes all basic services listed above, plus direct access to the Intel network and standard work applications such as office productivity software, connectivity applications, whole disk encryption, and virtual private network connectivity. This service is available only on Intel® architecture-based tablets, either corporate- or employee-owned, running a minimum of Windows 8 Professional. Typically, the premium service is chosen by users who use a tablet as a companion work device while traveling or attending meetings.

Phase 4: General Availability Across the Enterprise

During this phase, the result of which is summarized in Figure 2, Windows 8 will become the standard-issue OS for business Ultrabook devices. 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. We will continue to support both OSs for the foreseeable future. This stage will not have any beta components, and application readiness will be nearly complete.

AREAS TO EXPLORE

As we deploy Windows 8 across the enterprise, we plan to continue to explore several related topic areas that might lead to even greater enterprise benefits from the combination of Intel architecture-based devices and Windows 8. These areas include the following:

- **Ergonomic effects of a touch-based user interface.** Our IT Safety and Ergonomics program has established organizational processes dedicated to safety and ergonomics issues and improved visibility of safety issues across our organization and Intel. We will conduct surveys and motion studies to determine the ergonomic benefits (and possible risks) of a touch-based user interface and adjust our training and tools accordingly.
- **New peripheral ecosystem.** Intel IT is actively preparing for a future workplace that incorporates many devices with alternative form factors. As the consumer marketplace continues to introduce new devices at a rapid pace, Intel IT is actively exploring how to prepare our ecosystem to support new and alternative form factors, capabilities, and devices. Examples include touch-screen monitors and touchpads, near-field communication-capable devices, and most importantly, support for peripherals such as keyboards and mice through new USB and wireless docking solutions.
- **Enabling and updating applications.** Our initial deployment of Windows 8 includes an application readiness process to ensure that web and client applications are functional in the Windows 8 environment. To enhance usability and employee productivity, we will continue to update applications to support touch and the Windows Modern UI.
- **Exploring mobile device management (MDM) solutions.** We are actively researching an MDM solution for tablets running Windows 8 (see the Enterprise Benefits of Intel® Architecture-based Tablets sidebar). We expect to put the solution into production by mid-year.

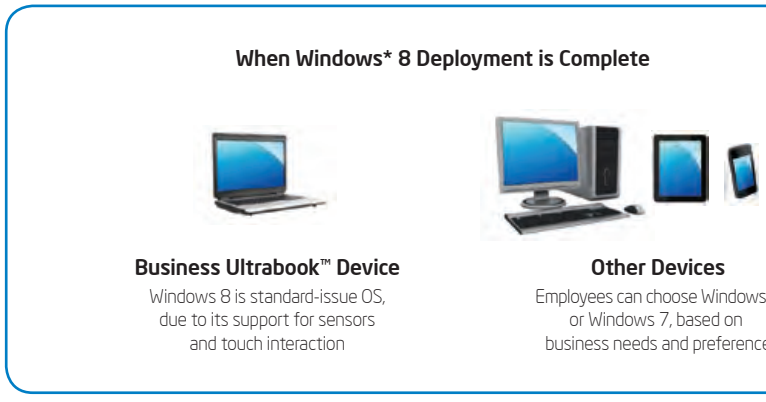

Figure 2. Windows* 8 will become the standard-issue OS for business Ultrabook™ devices and will be an option for other devices as well.

CONCLUSION

We have evaluated Windows 8 and the benefits it can bring to the enterprise when combined with Intel architecture-based devices such as business Ultrabook devices and tablets. Based on this evaluation and taking advantage of key learnings from our migration to Windows 7, we are deploying Windows 8 on an accelerated schedule, as opposed to our standard schedule. More than a simple product update, Windows 8's new user interface supports touch interaction and will enable us to address mobile productivity challenges in various work roles.

Some of the benefits Intel architecture devices running Windows 8 offer include faster start times, improved battery life, better responsiveness, improved connectivity, enhanced security, and the potential for taking advantage of various sensors on a device. These features are a natural fit with the growing use of Intel architecture-based tablets and business Ultrabook devices at Intel because these new devices include capabilities that can take advantage of Windows 8 features.

We will deploy Windows 8 throughout the enterprise on all form factors, including business Ultrabook devices (touch-enabled, standard keyboard-and-mouse, and convertibles), tablets, and laptop PCs. Our phased deployment will start with early adopters and BYO device users, followed by upgrades for application developers and employees already using business Ultrabook devices. Next, we will expand deployment to include Windows 8 as a standard PC refresh option. Finally, we will make Windows 8 available to everyone across the enterprise.

As the Windows 8 footprint at Intel expands through our 2013 deployments, we will continue to explore how we can take advantage of Windows 8 features that have the potential for even greater enterprise benefits from the combination of Intel architecture-based devices and Windows 8.

FOR MORE INFORMATION

- "Evaluating Microsoft Windows* 8 Security on Intel® Architecture Tablets"
- "Getting a Headstart on Location-based Services in the Enterprise"
- "Improving Facilities Operations with Intel® Architecture-based Tablets"
- "Evaluating Ultrabook™ Devices for the Enterprise"
- "Why the Device Matters in a Cloud-Centric World"
- "Preparing the Enterprise for the Impact of Alternative Form Factors"
- "Deploying Business Ultrabook™ Devices in the Enterprise" (February 2013)

Enterprise Benefits of Intel® Architecture-based Tablets

Intel® architecture-based tablets running Windows 8 provide the mobility and user experience that Intel employees expect as well as the security, manageability, ease of integration, and low total cost of ownership that Intel IT requires. Tablets featuring the Intel® Atom™ processor, Intel® Core™ processor, and Intel® Core™ vPro™ processor are thin and sleek and can meet the mobile use case requirements of Intel's highly mobile workforce. While tablets with Intel Atom processors do not provide the performance and security features necessary for use as a primary PC, we expect them to be valuable companion devices for Intel's highly mobile workforce.

For example, we recently conducted a proof of concept testing the usefulness of tablets in manufacturing facilities operations and found that technicians reported up to a 17-percent increase in productivity based on the number of work orders completed (for more information, refer to the white paper, "Improving Facilities Operations with Intel® Architecture-based Tablets.")

The enterprise benefits of Intel architecture-based tablets—available from major OEMs across the globe—include the following:

- Extended and in some cases all-day battery life
- Enterprise-level multi-tasking and collaboration
- Responsive touch-based user interface
- Advanced security and manageability features
- Compatibility with a wide range of existing applications
- Enhanced connectivity

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

ACRONYMS

BYO	bring your own
BYOD	bring your own device
MDM	mobile device management
Modern UI	Modern User Interface
PoC	proof of concept
NFC	near-field communication
TAC	Technical Assistance Center

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