

IT@INTEL

Refresh Cycle Still Relevant as the IT Landscape Evolves

SIMPLIFY LANDSCAPE

Simplify the client landscape by using a standard configuration and a single build process.



DEVICES AS ASSETS

Treat devices as strategic assets with timing, total cost of ownership, and line-of-business needs.

Executive Overview

Over the past few years, the variety of client devices in use at Intel has grown significantly. While we still find that a 2- to 4-year refresh cycle offers the best total cost of ownership, some of our client device fleet management practices have also evolved. Improvements in security have enabled Intel IT to broadly support personally owned mobile devices, while advances in the Windows* OS have accelerated the adoption of touch-based devices. Several use cases across the enterprise have shown the value of new form factors, such as Intel® architecture-based tablets and 2-in-1 devices. We believe that a standardized build supported across a wide choice of devices provides the best opportunity for enhanced productivity.

Even with the proliferation of device types, we continue to adhere to the fundamentals of client device lifecycle management:

- Develop an understanding of device total cost of ownership.
- Treat devices as strategic assets.
- Simplify and secure the hardware and software ecosystem, while still supporting employee choice.
- Evaluate the benefits of new OSs as they become available.
- Emphasize the productivity benefits that new technologies bring to Intel's employees.

When making decisions about device lifecycle management, we are guided by our previous experience¹ and by more recent proofs of concept and pilot projects that extend this experience to a wide variety of devices.

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¹ See the IT@Intel brief "PCs as Strategic Assets."

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Acronyms

TCO total cost of ownership

Recognizing All Aspects of Total Cost of Ownership

In the mid-1990s, Intel's client device lifecycle management policy was based on two assumptions:

- PCs (the only client devices in use at that time) had a four-year depreciation cycle.
- The most economical purchasing strategy was to provide lower-cost, minimally equipped PCs for general use.

However, when we examined the return on investment of more powerful mainstream systems, we discovered that acquisition costs make up only a small portion of the total cost of ownership (TCO) for client devices. Our studies, originally conducted in 2009, demonstrated two primary learnings:

- **Three years is the optimal refresh rate.** Keeping PCs longer than three years significantly increased support costs and security exposure.
- **Use of mainstream PCs increased the lifespan of the PC.** Lower-cost PCs were unable to support the latest OS and application updates and rarely lasted their expected life spans. In addition, legacy operating systems and older versions of web browsers increased security risks and reduced productivity, requiring us to make additional device purchases and more frequent refreshes than we had planned. This approach increased our overall costs and shortened the useful life of our assets.

In the last few years, our evaluations of other device types, such as Ultrabook™ devices and Intel® architecture-based tablets, have led us to similar conclusions: lower-cost and consumer-level devices have a higher TCO. Enterprise-level devices last longer and have the features Intel employees need to perform their jobs efficiently. As our policy evolves, we continue to refine our TCO evaluations for all devices, including Ultrabook devices, tablets, and 2-in-1 devices.²

² See the IT@Intel white paper "Evaluating Ultrabook™ Devices for the Enterprise."

Managing Client Devices Using a Strategic Approach

Over the past seven years, the IT device landscape at Intel has changed dramatically. In 2009, most users had laptop PCs running Windows* XP, with no companion devices. Hard drives were the norm, and only a few users had corporate-owned smartphones. Ultrabook devices, tablets, and 2-in-1s had not yet been developed.

Since then, new security capabilities have been introduced. These capabilities include mobile device management and improved two-factor authentication, and a majority of new devices that are touch-enabled. Solid-state drives are part of our plan of record, and many Intel employees use their own devices, including tablets and smartphones, in the corporate environment.

Our requirements for managing PCs as strategic assets have evolved, and we have extended them to include the new devices and capabilities, while continuing to meet the following objectives:

- Enhanced security
- Improved productivity for both employees and IT staff
- Reduced costs

Even with this evolution, our experience has shown that the basics of device lifecycle management remain substantially the same. Higher-specification client devices with a regular refresh cycle improve security, increase device lifecycle manageability, and reduce TCO. Optimizing performance and reducing costs require simplification through standardizing platforms and processes and taking advantage of new technologies to achieve improved productivity, efficiency, and security.

Simplifying and Securing the Hardware and Software Ecosystem

Intel IT recognizes that the consumerization of IT is inextricably related to the evolving concept of mobility as a way of working. Through user surveys and observational studies, we initially demonstrated that wireless and mobile technologies offer a greater than 5-percent time savings in an employee's workweek. Today, these capabilities are a requirement for the way we work. We constantly explore new technologies available in the industry, identifying potential use cases for these technologies to improve productivity and lower TCO. To enhance productivity and employee job satisfaction, we offer a wide choice of device types and form factors to Intel employees. However, for corporate-owned devices we have also adopted a standardized client build.



In our survey of more than 6,000 Intel employees worldwide, 90 percent of respondents preferred a touch-enabled device.

- See the IT@Intel white paper "Accelerating Deployment of Touch Devices to Extend Platform Life."

While still supporting the employee's choice of device, we can simplify our environment and achieve many benefits:

- Decrease overall costs and improve network security through a reduction in the complexity of the installed base.
- Decrease IT support costs by using an optimized number of hardware configurations, which reduces training, documentation, and unique process requirements. This approach also requires fewer system and component inventories, thus minimizing break-and-fix costs.
- Deliver solutions faster and cheaper because it takes IT staff less time to qualify and test software and updates.
- Improve network security through significantly faster deployment of security patches.

Managing the Client Device Lifecycle

Our device lifecycle management strategy includes the following activities:

- Determine the optimal refresh rate (currently 2 to 4 years for PCs; we anticipate similar optimal refresh cycles for other form factors).
- Optimize the deployment of new technology.
- Improve the accuracy of inventory management.
- Streamline our build and image management and Intel Help Desk support practices.
- Remove outdated devices from production.



WE INCREASE EMPLOYEE PRODUCTIVITY

by supporting their choice of multiple devices.

Over the years, we have developed IT best practices for device lifecycle management that have far-reaching benefits. These benefits include increased employee productivity and improved IT efficiency while keeping Intel assets secure and an improved ability to both deliver increasing business value to the company and take advantage of emerging technologies. For example, we have developed tools that support proactive client health management, and we are actively exploring client-aware technologies that will enable us to deliver services to clients in an optimal manner. For employees with Intel architecture-based tablets and 2-in-1s, we provide special applications that make data transfer easy from device to device and that use the cloud to augment devices with low storage capacity.

In 2012 we optimized our delivery process for laptops, Ultrabook devices, and 2-in-1s, resulting in improved Intel employee productivity, a better employee experience, and improved operational efficiency. The new, streamlined steps to the PC delivery process include preparing the data, settings, and core applications for employees in advance. Now, instead of borrowing a loaner PC for half a day, many employees can get a new, ready-to-go, personalized system in less than an hour.

Enhancing Client Device Security

We believe that a secure fleet of client devices offers a number of benefits, including reduced costs, improved productivity, and protection of intellectual property. To enhance security at Intel, we have deployed the following security solutions:

- **Granular trust model.** Designed to support key initiatives such as IT consumerization and cloud computing, our new approach to information security provides more flexible, dynamic, and granular security controls than traditional enterprise security models. We have based the new approach to security on trust calculation, security zones, balanced security controls, and an expanded concept of perimeters that includes users and data. The trust model allows us to make access decisions based on the trust level of the requestor and the sensitivity of the access requested. If the trust is not high enough, we can deny access. Alternatively, we can make changes to reduce the sensitivity, such as changing a download request to a remote view.
- **Encryption.** In 2009 we deployed software-based encryption on corporate-owned laptops provided to employees. We encrypted the entire drive, including data, applications, the OS, and free space. The development of the Opal standard, published by the Trusted Computing Group*, led us to formulate a long-term encryption roadmap in 2012. This roadmap includes Opal-compliant drives and standard encryption-management software. We are currently deploying the Opal-compliant Intel® Solid-State Drive Pro 1500 Series in our mainstream platforms. Our encryption management solution, McAfee® Full Disk Endpoint Encryption for PCs, supports these drives seamlessly.³ Our plan of record includes equipping all new PCs with Opal-compliant self-encrypting drives from the Intel® SSD Professional Family.
- **Secure connectivity.** To make it easier for employees to use small form factor devices to accomplish job duties, Intel IT has developed a secure connectivity solution. This solution helps us broaden the range of applications available to managed devices and eventually to unmanaged devices using our Mobile Device Management application.
- **Enhanced IT service delivery.** By deploying Intel architecture-based tablets and 2-in-1s, we can support these devices across the corporate network in a secure manner, enabling employees to attain full productivity benefits while still meeting our stringent security requirements.

Transforming IT Support Services

Just as the environment for physical hardware has evolved, our support model has also changed over time. We have moved from a traditional, one-to-one support model to a centralized, remote-support model. This shift enables us to manage the support needs of many systems concurrently, reducing operating costs and the time users have to wait for system repairs. In fact, Intel employees report a 96-percent satisfaction rate with the Intel Help Desk.

Recent support enhancements include the following:

- **Self-support tools.** Our self-service PC Health Check utility, which enables users to quickly run a series of diagnostic tests and resolve many problems without assistance from the Intel Help Desk. We have also developed a vending machine for peripherals, which enables Intel employees to immediately obtain the peripherals they need from a vending machine with consigned inventory. Employees can get their choice of peripherals in less than a minute, any time of the day.
- **SupportIT portal.** A team of Intel IT support personnel and IT engineers has built a web-based portal to increase the effectiveness of our support agents and improve efficiency. This portal integrates more than 20 tools and data sources, enabling support agents to quickly resolve a reported problem as well as proactively identify a variety of known problems and fix them before they negatively affect the IT customers' productivity.

96% INTEL HELP DESK
SATISFACTION RATE

³ See the IT@Intel white paper "Improving Data Protection with McAfee Drive Encryption" and the radio show.

Improving Employee Productivity Through Technology

We improve employee productivity by providing the right device for the right use case. For example, when we began deploying Intel architecture-based tablets, we identified specific use cases that could benefit from using a tablet as a companion device. We have determined that mobile devices are valuable for Intel employees who are perceived as role models in the industry. For these employees, we make Ultrabook devices and 2-in-1s available as a refresh option.

We are exploring the possibility of providing Intel architecture-based tablets as a refresh choice for specific segments of Intel's workforce. These use cases may include a shared device for manufacturing and data center facility employees and for employees who travel a moderate amount. Eventually, although we have not yet identified a use case strictly for tablets as a primary device, we plan to make Intel architecture-based tablets available through the refresh cycle to all employees.

We continue to evaluate technology advances and deploy new technology when they offer significant business value, including the following examples:

- **Touch-enabled devices.** We implemented an accelerated adoption of touch-enabled Ultrabook devices with Intel® vPro™ technology based on several factors: employee demand for touch capabilities is increasing, enterprise applications are becoming more touch-enabled, and touch-enabled devices can increase employee productivity and lower the TCO. To date we have 85,000 touch-enabled devices deployed. Figure 1 illustrates the growth of touch-enabled devices at Intel.
- **Flexible service delivery.** We have implemented a multi-tiered set of secured and managed services that provides flexibility and optimal productivity to Intel's employees as they switch from one device to another according to need and preference.
- **Employee Hotspot Network.** IT consumerization and the business need for broader network access present Intel IT with a continuously evolving challenge. In 2010, Intel IT enabled a mobile Employee Hotspot service to accommodate personal devices accessing the Internet. To stay ahead of demand, we re-architected the service using an overlay network, making it easier to deploy with lower cost. This new overlay network uses virtual routing and forwarding technology, which can use our existing network infrastructure without additional hardware.

These types of solutions, combined with our 2- to 4-year refresh cycle for laptops, have improved and extended our mobile workers' productivity and resulted in built-in manageability, less downtime, and faster repair times.

Ultrabook™ Devices and 2-in-1s at Intel

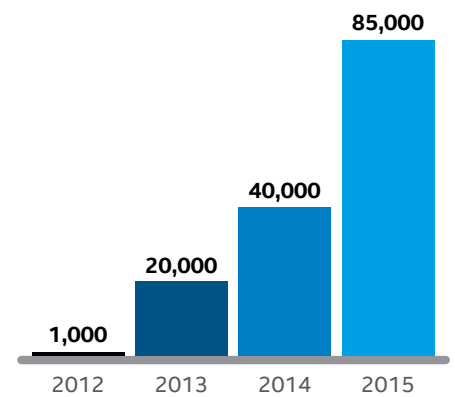



Figure 1. The number of Ultrabook™ devices and 2-in-1 devices in use at Intel has steadily increased over the last four years. As these devices become an integral part of our IT landscape, we expect to implement a refresh cycle for them, similar to the one we use for laptops.

98.5% 
**OF ULTRABOOK™ DEVICES
 AND 2-IN-1s ARE TOUCH-ENABLED**

Conclusion

The IT landscape at Intel has changed dramatically since 2009, when we first examined client device TCO. We have deployed new form factors, identified new use cases, and introduced new technologies. But some things have not changed. The fundamentals of device lifecycle management are the same today as they were seven years ago. A steady refresh cycle combined with higher-specification devices improves security, manageability, and TCO. Simplifying and securing the hardware and software ecosystem, while still supporting employee choice, results in optimized performance and costs. Our continued analysis of how new technologies can benefit the enterprise will result in increased employee productivity and job satisfaction as well as enhanced IT efficiency and security.

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

Receive objective and personalized advice from unbiased professionals at advisors.intel.com. Fill out a simple form and one of our experienced experts will contact you within 5 business days.



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System configurations, SSD configurations and performance tests conducted are discussed in detail within the body of this paper. For more information go to intel.com/performance.

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IT@Intel

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Our goal is simple: improve efficiency throughout the organization and enhance the business value of IT investments.

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