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IT@Intel:
Optimizing PC Refresh

Intel IT's innovative three-year PC refresh program uses telemetry data to segment users and tailor new PCs to suit individual workloads, work habits, and job requirements—increasing employee productivity and satisfaction

Our three-year PC refresh program will provide Intel employees with updated equipment that meets their job requirements.

Executive Summary

It is imperative that Intel employees have up-to-date technology and devices that let them perform their jobs efficiently. To that end, Intel IT historically refreshed PCs periodically, updating on-staff engineers every three years; other direct hire, full-time employees every four years; and waterfalling older machines to contingent workers. We realized that this refresh cycle wasn't sufficient after employee discussions revealed they needed faster and lighter laptops to help them do their jobs easier, more efficiently, and more comfortably.

We embarked on an ambitious initiative to provide Intel's workforce with new technology every three years—or less—across the board. We also developed and are implementing a plan that lets us provide individual employees with just the right device to support their particular job, using telemetry data, while protecting the users' privacy to discern their work habits and identify their individual computing needs. We categorize employees based on the data insights and then allow workers using devices older than three years to select a new PC in a form factor and with performance and capabilities that match their needs. Previously, we primarily offered PCs with Intel® Core™ i5 processors; we are now including a higher percentage of PCs with Intel Core i7 processors in the mix.

Our three-year PC refresh program will provide Intel employees with updated equipment that meets their job requirements, and will give all workers a device that best suits the jobs they need to do, helping to reduce maintenance costs, facilitate collaboration, boost productivity, and increase employee satisfaction.

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Background

In any industry, it is essential for employees to have the right tools they need to perform their job successfully. When the workforce heavily relies on technology, it is critical that management supply employees with devices that have the power, features, and capabilities that support their work.

To that end, Intel IT's goal is to provide well-featured modern PCs to help bolster workforce productivity and satisfaction. However, providing brand new machines for all 110,000 of Intel's employees each time there is a technological advancement would be logistically difficult and financially prohibitive.

We have always considered PCs like any asset, and tried to balance budgetary considerations with performance needs by refreshing Intel's PCs on a regular basis.

- We refreshed our Intel staff engineer PCs when they became three years old.

- We refreshed the other full-time direct-hire workers' PCs every four years.

- We waterfalled the older PCs, passing along the staff devices to support our contingent worker community.

A small number of executives and some customer-facing teams also received new machines every two years.

Over the past two years, we discovered we needed to accelerate our efforts to modernize employees' PCs. Employees wanted lighter and faster laptops so they could do their jobs more easily and efficiently. As a customer-centric IT organization, we took their concerns seriously. Our old refresh strategy was not keeping up with employees' performance and new capability requirements. For example, users who frequently traveled needed lighter-weight laptops. Others who used their mobile devices for extended periods needed more battery life. And waterfalling aged PCs to contingent workers resulted in slowdowns and loss of productivity.

We recognized that we had to make a change to the refresh process in order to supply our employees with the advanced tools they need to do their jobs. However, we also knew that providing new worker PCs on an aggressive schedule would be expensive, and that simply giving every worker a new PC would not solve every issue for every individual.

We've started implementing an innovative, data-driven PC refresh program that provides every worker with a personalized device tailored to his or her specific computing requirements.

Another driver of revamping our PC refresh strategy is the industry's transition to OS-as-a-service. Prior to Windows 10, major OS upgrades occurred every three to four years. But now, these upgrades occur much more often. The frequent and time-consuming OS upgrades degrade the PCs' performance, overload the network, and need manual intervention in case of failure, lack of disk space, and more.

We needed an effective strategy to provide PCs that would enable us to satisfy each worker's specific computing needs while not overreaching our budget. But we also realized that doing nothing was becoming costly as well. The total cost of ownership goes up significantly for devices older than three years, due to higher maintenance costs and reduced productivity because workers can't easily perform essential tasks on slower and less-capable machines. In addition, the older the platform is, the less likely it will be that hardware and software vendors issue security patches, increasing the potential risk to the internal network.

Solution

Our new refresh strategy helps ensure that all employees are using devices newer than three years old at all times. But even further, our plan also involves giving Intel's workforce the right tools they need to do their jobs. We developed and have started implementing an innovative, data-driven PC refresh program that provides every worker with a personalized device tailored to his or her specific computing requirements.

We have realized that one size does not fit all. In the past, we separated users into two groups, based on job requirements:

- Engineers, who needed the extra performance of powerful PCs.

- Office workers, who received less powerful mainstream devices that were appropriate for relatively less-demanding tasks.

We used Intel® Core™ i5 processors in almost every machine, with Intel Core i7 processors in the most powerful laptops used by the two percent of the workforce whose jobs required the extra performance.

Aiming for more a more precise employee-PC match, we wanted to more granularly separate the population into several user categories or personas. We installed Intel® Client Computing Group (CCG)-developed telemetry devices on all employee PCs, so we could measure things like CPU and memory utilization, wait time, on/off times, and connections to the wireless network. We also measure which applications are being used—for example, Web browsers, office/productivity tools, design and development tools, and games—and how long users are accessing them. To protect users' privacy, the data is normally anonymized. The data revealed specific use patterns that helped us classify users and determine the right PCs to offer each type of employee.

We currently categorize users into one of the following personas:

- **Road Warriors.** This group travels frequently and relies on their laptops out in the field. These highly mobile users appreciate extra-lightweight machines with long battery life and speedy wake-up times.

- **Gear Heads.** Close to half of Intel's employees are technical experts. Members of this group may require very powerful, high-performing PCs to complete increasingly demanding tasks while others need a platform that can enable their productivity.

- **Meeting Masters.** These employees may be in the building most of the time, but they spend a good portion of their day in conference rooms. This group requires a PC with a long battery life and the ability to support multiple collaboration tools.

- **Builders.** These workers are typically manufacturing technicians and engineers who work in a lab or factory, but also return to their desks to check email, make calls, and attend meetings. This group needs reliable but less powerful machines than other personas, and laptop size and weight are not a big consideration.

- **Free Dwellers.** With jobs in marketing or project managers of a globally dispersed team, these users can work anywhere throughout the office environment based on the type of work they do and who they interact with. This group requires a powerful and lightweight laptop that suits their portable work environment.

- **Co-working Crew.** These employees primarily work from their desk, collaborating with people near them or around the world. However, this group doesn't require the powerhouse machines that engineers need. And some co-workers might be able to do their jobs efficiently with a lower-tier PC, if their primary activity is reading and sending emails.
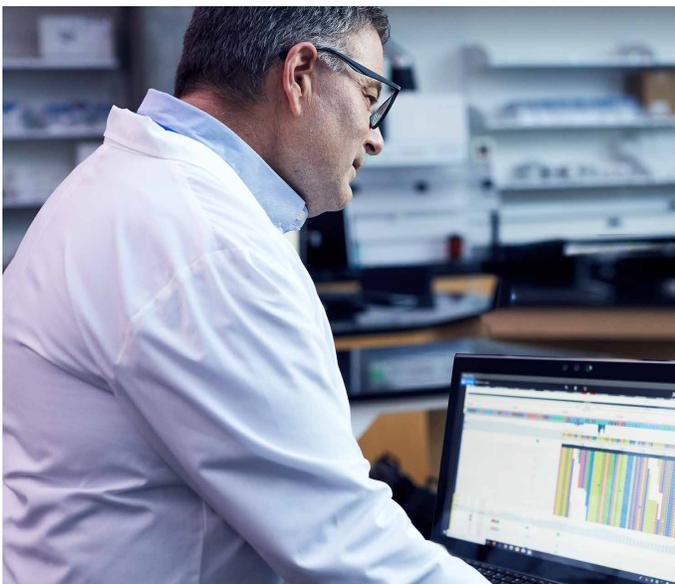
Builders are typically manufacturing technicians and engineers who work in a lab or factory.

Road Warriors travel frequently and rely on their laptops out in the field.

We have already implemented the Road Warrior persona refresh and we plan to supply the other personas' devices later this year. Although we currently use these six personas to segment users, we plan to introduce more granularity and additional categories to help us more precisely match PCs to specific user needs. And while the three-year PC refresh cycle will now be standard throughout our organization, our model is flexible. If our telemetry data shows someone needs a shorter cycle, we can refresh more often, and we can lengthen the refresh time if a user doesn't need additional capabilities. Our ultimate goal is to identify the optimal time for refresh so we don't impact employee productivity or overspend on new devices.

We are also including our contingent workers in our organization-wide effort to implement only newer machines. This group has usually received full-time employees' hand-me-down PCs that have aged beyond three years. We have realized that more and more critical and performance-demanding jobs are being outsourced so we need to provide the same computing capabilities to our contingent workforce as well. While some of these personas don't necessarily need a high-powered PC, they became hampered by the older technology and are increasing the overhead and risk to the organization. To help ensure that these workers are using appropriate technology to do their jobs, we decided to equate the conditions with our regular workforce by either providing new machines or continuing to waterfall relatively new PCs that are less than three years old.

Offering Each Employee a Set of PC Options

We offer a few, pre-determined models to each of the persona groups. In general, the device categories include desktop, powerful laptop, standard laptops, and lightweight systems. We have standardized on devices that are equipped with an Intel Core i7 processor with up to 32 GB of memory. However, we will continue to offer machines with Intel Core i5 processors to users who, based on telemetry data, don't need the i7's extra power and performance.

Depending on the persona, device types include laptops, a portable workstation with powerful graphics, thin and light tablets with 16 GB of memory, and a 2-in-1 option. When necessary, we can upgrade memory. We are dramatically ramping up the deployment of PCs with Intel Core i7 processors to provide performance-demanding users with the tools they need to be productive while providing Intel Core i5 processor-based PCs to those whose jobs do not require the extra performance.

Facilitating PC Order and Delivery on a Massive Scale

In previous years, our run rate for PC refresh was about 20,000 devices. By late Q1 2020, we completed a significant number of refreshes, consolidating about three-quarters of a typical year's refresh rate into a single quarter. We intend to complete the rest of the planned refreshes in the remainder of the year, as well as refreshing nearly all of the contingent workers' PCs. In all, we plan to refresh about half of employee PCs in 2020, or about three times our previous rate.

Handling such an enormous volume of orders and delivering the PCs is a potentially daunting challenge, but we have developed a process to streamline both order and delivery. We buy PCs for inventory based on the historical preferences, which allows us to forecast the number and type of devices to order. If we were to place individual orders, they could potentially take up to 10 weeks for delivery. Our method gets new and tailored PCs in the hands of users within two weeks.

Our industry-leading solution for PC delivery and build can handle high-volume deployment. Our standard IT build and PC delivery process enables users to obtain a new PC from an on-site "Grab-and-Go" PC locker at their convenience and use a simple, self-setup process to configure the PC and install their old PC's applications, while their email, data, and settings can be downloaded from the cloud to the new device. This way, technicians spend less time on PC repair, refresh, and delivery, which saves money and greatly improves user experience.

Conclusion

Accelerating the refresh cycle delivers better PCs to all workers more quickly. And by optimizing technology with personalized PC selection and tailored computing capabilities, we can provide every individual in Intel's workforce with a system that truly supports their specific job, individual work habits, and personal preferences. We believe that giving employees a new PC with performance improvements every three years can help lead to greater employee productivity and satisfaction. Employees that were formerly longing after a new, updated device are now able to perform tasks more efficiently and report greater satisfaction with their jobs.

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