

## Benefits of Enabling Personal Handheld Devices in the Enterprise

The personal device program is delivering significant benefits in productivity and user satisfaction at low cost to Intel.

### Executive Overview

In response to IT consumerization, Intel IT began allowing employees to use personal smart phones to access enterprise resources in early 2010. The program has rapidly become a success, delivering significant benefits in productivity and user satisfaction at low cost to Intel. More than 10,000 employees are now using personal devices to access corporate e-mail, calendar, and contacts.

Introducing personal devices into our environment presented significant security and privacy challenges. Intel IT, working closely with Intel Legal and Human Resources groups, spent about two years developing new policies to enable personal device use, resulting in an employee agreement that all users digitally sign. This sets expectations for device use while protecting Intel and employees.

Results of the program include:

- **Increased productivity.** Employees report saving 47 minutes per day on average by using personal devices—about 10 percent of an eight-hour workday. This adds up to total time savings of more than 500,000 hours per quarter.
- **Improved flexibility.** Employees send approximately 1.8 million business-related e-mail messages each quarter from corporate and personal handheld devices.
- **A high level of user satisfaction.** The satisfaction rate exceeds 90 percent among users of personally owned devices.
- **Relatively low cost to Intel IT.** Analysis shows that carrier service plans account

for most of the cost of providing handheld devices. With personal devices, employees usually pay for the service plans, so the cost of adding new devices is low.

- **No impact on support.** The number of Service Desk tickets related to handhelds has not increased significantly, despite the addition of 10,000 personal devices. Averaged across all corporate and personal handheld devices, the number of tickets per user has actually decreased.

Due to our groundwork establishing policy and infrastructure, we have been able to quickly support new devices and OSs—in some cases on the day the product is introduced. We now support five major handheld device OSs. With Intel employees now using more than 23,000 corporate and personal handheld devices, we are investigating the potential to streamline business processes and further increase productivity by enabling access to additional enterprise applications from handheld devices. We are also enabling use of other device types, such as tablets, and we are planning to pilot a bring-your-own-computer program.

Ronald E. Miller  
Business Relationship Manager, Intel IT

Joe Varga  
Service Owner, Intel IT

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## IT@INTEL

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## BACKGROUND

**As new and innovative smart phones and other mobile devices rapidly proliferate, an increasing number of Intel employees want to use their personally owned devices within the enterprise. They want to choose the platforms, applications, online tools, and services that they use to accomplish their jobs—as well as manage their lives outside of work. This trend is often referred to as the consumerization of IT.**

Intel IT recognized several years ago that letting employees use their personal devices could increase employee productivity and satisfaction, as well as help attract and retain talented people. At the time, access to corporate data was limited to employees who were eligible for Intel-owned corporate smart phones because the devices were deemed essential for their jobs. However, there were many additional employees who were not eligible for corporate devices, yet still wanted the benefits of being able to access their corporate e-mail, calendar, and contacts from handheld devices. By providing these employees with access to enterprise information and applications anytime, anywhere, we could enable them to work in more flexible and productive ways.

Allowing personal device use presented significant security and privacy challenges. To overcome these, Intel IT, in close collaboration with Intel Legal and Human Resources (HR) groups, spent about two years developing new policies that enabled personal device use while protecting Intel and employees.

In early 2010, we introduced a program that allows access to corporate data from employee-owned smart phones. Employees can now access corporate e-mail and e-mail attachments, calendar, and contacts on handheld devices that pass our security compliance qualification.

## History of Corporate Handheld Devices at Intel

Employees have been using corporate-owned handhelds as companion devices to their PCs since 1999.

Intel's workforce is highly mobile: About 80 percent of employees use mobile business PCs as their primary computing platform. A significant number, such as sales representatives and on-call support technicians, need the additional mobile access that smart phones provide. These employees are able to request corporate smart phones, which are issued with manager approval.

Prior to the policy change, there were about 10,000 wireless handheld users across Intel. Globally, we support more than 50 different corporate-owned devices, used on about 80 carrier networks. We use a variety of push e-mail systems to transfer e-mail between these devices and our enterprise e-mail servers.

Realistically, Intel can only support a limited number of corporate-owned devices and carrier service plans; to use IT resources most efficiently, we focus on a set of reliable corporate solutions with low total cost of ownership.

## Changing Policy to Allow Personal Devices

Until our policy change, Intel IT did not formally allow personal devices to access corporate data, although we tolerated use of personal devices in some cases as long as the devices did not directly connect to the network.

Changing the policy to enable personal device use required significant effort. Intel's CIO championed the initiative and provided high-level backing that was essential to drive the prolonged and complex process. The policy change required input and approval from Intel Legal and HR groups in several different global regions.

The new policy was formalized in a key document, known internally as the end user license agreement. This employee agreement sets expectations about what Intel will provide and user obligations; by electronically signing the agreement, users agree to Intel policy. After users sign, their direct managers need to approve the request before it can go into effect.

The new policy provides a way for users to choose from a much broader range of devices, options, and service plans, which they can customize to suit their needs.

## Corporate, Personal, and Hybrid Usage Models

Initially, we supported two usage models:

- Corporate device with corporate service plan
- Personal device with personal service plan

We subsequently added a third, hybrid model:

- Personal device with corporate service plan

Demand for this model came from people who were using corporate devices, but wanted to choose phones with more features and were prepared to pay for them. The three usage models are compared in Table 1.

Corporate and personal devices are managed the same way, using the same security measures and policies. All users are now required to sign the employee agreement, whether they are using a corporate or personal device.

We do not allow all personal devices, and some of the personal devices we permit receive less access to services because they provide a lower level of security; for example, some devices are not allowed to receive e-mail attachments.

## Personal Device Program Adoption

Employees rapidly adopted the personal device program. By January 2011—just a year after introducing the program—about 10,000

Table 1. Handheld Device Usage Models at Intel

Service Option	Who Purchases Device	Who Pays for Service Plan
Corporate	Intel	Intel
Hybrid	Employee	Intel
Personal	Employee	Employee

users had enrolled. Largely because of this, the total number of corporate and personal handheld devices has leapt to about 23,500 devices, used by about 20,700 employees. Personal devices account for about 43 percent of the total. Today, we support devices based on five major OSs.

## ENABLING THE USE OF PERSONAL HANDHELD DEVICES

Our personal device program has evolved in several stages.

- **Development of the employee agreement in close collaboration with technical and non-technical groups across Intel.** The agreement undergoes periodic review as new technology becomes available. For example, when the agreement was originally developed, the ability to turn a mobile device into a Wi-Fi\* hotspot was rare; now this capability is available on many devices.
- **Implementation, including test and initial rollout.** Focus areas included automating the signup process, and monitoring and reporting capabilities.
- **Continuing addition of new devices.** This requires new approaches and technologies, including a dynamic security model flexible enough to accommodate a variety of devices.

In addition, we are now researching development of enterprise applications tailored to handhelds.

## Employee Agreement

All people wishing to use personal handheld devices must agree to the terms of the employee agreement before they can begin using their devices to access Intel services and data.

In addition, users' managers must review and approve each request. To avoid any confusion and potential litigation, the agreement states that Intel does not require employees to purchase devices if those devices are essential to performing their job duties.

The agreement is written in plain language so that employees can easily understand it. It does not discuss specific technologies or products, and the terminology is general enough to remain applicable as technologies change.

Intel continues to review the policies and procedures employees must follow as part of the agreement as well as local policies. In general, our goal is that controls should be enforceable and practical; unrealistic or unenforceable controls could simply be ignored.

The agreement covers a number of items and provides links to associated Intel policies where appropriate:

- **Signup and registration.** If employees want to receive corporate information, such as e-mail, on a personal device, they must sign the agreement. They must register all devices accessing mail, calendar, and contacts.
- **Data protection.** Employees must protect Intel's intellectual property and information assets according to Intel's standard company policies regarding data storage, retention and backup, encryption, and disposal of the

device. Other possible scenarios may include sharing unlocked devices with others and dealing with malware. The agreement also describes how to make sure Intel data has been removed once employees have finished with a device.

- **Security enforcement.** Because users are very interested in how much control Intel has over their devices, the agreement provides guidance about the methods Intel can use, at its discretion, to help secure company data and confidential information on the device. Methods include monitoring, inspection, mandatory remote wipes, and disconnection.
- **Resources and support.** Where to get support, what to do if the device is lost or stolen, and how users can find additional information.
- **Policy compliance.** Compliance with Intel's standard policies, including its code of conduct and software use and licensing policies, and what the employee can expect if they violate these policies.
- **Software licensing.** Restrictions on software use specifically relevant to personal devices, including the fact that only appropriately licensed software should be used on the employee's device. Some software purchased by Intel may not be licensed for use on a non-corporate device, just as some employee-purchased software may not be allowed for work. Further, not all software use agreements are applicable to personal devices used for work purposes. Employees with their own data contracts may need to follow different policies when they are at an Intel site than when they are at home.

## Implementation

It took approximately five months to implement the program after developing the employee agreement. We first deployed the program to a pilot group of 100 users across Intel. This enabled us to test employee acceptance of the agreement and gather

feedback. Based on the success of this pilot, we moved to production deployment.

We developed an intranet site to support the program, with the goal of accelerating and streamlining adoption. Employees who are interested in participating in the program visit the Web site, which automates the sign-up process and provides other helpful information.

During signup, employees are presented with the agreement; after they accept the terms, the system contacts their managers for approval. They also provide other necessary information such as device type and carrier service.

The Web site answers frequently asked questions (FAQs) and enables users to troubleshoot some problems without contacting the Service Desk, thus reducing Intel IT support requirements.

We publicize the program to employees through the internal Intel news service and other channels.

## Adding New Devices

The consumerization of IT requires a shift in the IT mindset: Previously, our organization dictated which products employees could use in our environment, and when. Now, the situation is almost reversed. As new consumer devices come to market, employees hear about them and want to use them. Intel IT needs to respond quickly to employee requests by signaling our intentions and implementing support where appropriate.

To achieve this, we provide positioning statements that indicate which OSs and devices we plan to support, and when we anticipate supporting them. Whenever possible, we provide this statement soon after products are announced and before they become available. This enables users to anticipate our plans before they decide to buy specific devices. We also aim to support new devices or OSs as soon as it is feasible to do so; in some cases, we have added a device to our program on the first day it became available.

Several factors facilitated our rapid ability to support new devices while minimizing cost:

- Our groundwork in establishing the employee agreement, creating infrastructure, and defining handheld device requirements reduces the work required to add each new device.
- We use third-party applications to deliver services, such as push e-mail systems, to some devices. This insulates Intel IT from the need to directly interface to each device; application providers also typically work with device suppliers to quickly implement support with the release of each new device and OS.
- We made a shift to support OSs rather than specific devices. This makes it easier to support multiple phones running a new OS or a new release of an existing OS. It also is easier to support new types of devices, such as tablets, that are based on an OS we already support.

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## BUSINESS VALUE

**Our personal device program is delivering significant business value to Intel. The program has resulted in increased productivity and high user satisfaction ratings, while adding relatively little to IT support costs.**

### TIME SAVINGS AND USER SATISFACTION

To assess time savings and satisfaction levels, we surveyed a cross-section of users—including those who used corporate and personal devices—across several business groups and regions.

All users who responded to our survey, conducted in late 2010, indicated that they had a mobile work style; 20 percent indicated that they spent more than three-quarters of their time away from their desks.

## Productivity

Nearly all respondents said they saved time by using their handheld devices. On average, personal device users said they saved more than 47 minutes per day—about 10 percent of an eight-hour workday. Extrapolated across the more than 10,000 personal device users, this means that our program to enable personal devices results in quarterly time savings of more than 500,000 hours.

## User Satisfaction

Overall user satisfaction has remained high, at about 90 percent—and was highest among users of personal devices, including those using the hybrid model of a personal device with a corporate-paid carrier service plan.

## E-MAIL

Employees use handhelds extensively for accessing corporate e-mail. Since implementing personal devices, the volume of corporate e-mail sent from all handheld devices has grown significantly to a total of about 1.8 million messages per quarter.

## COST PER DEVICE

Though cost reduction is not the goal of the personal device program, our analysis shows that allowing personal devices in the enterprise is highly cost effective.

As shown in Figure 1, service plans account for most of the quarterly costs of corporate handheld devices. Direct IT cost accounts for only about 10 percent of the total. With personal devices and plans, IT costs remain similar because Intel IT provides push e-mail and other applications; however, users pay most of the total cost. This means that our relatively small IT investment enables the benefits—such as productivity gains—of adding many handheld devices to the enterprise.

## SUPPORT REQUIREMENTS

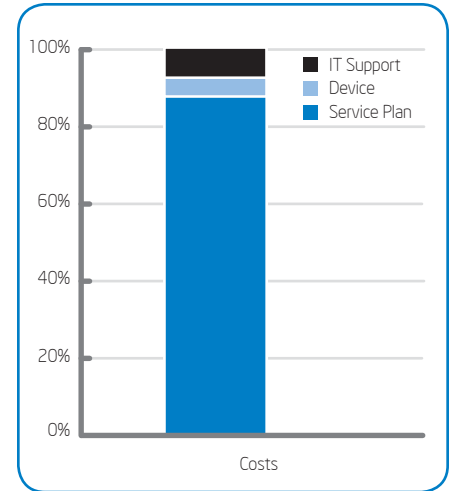
A common enterprise concern is whether allowing the use of personal devices will increase the burden on the Service Desk. Overall, we have found that the number of support tickets has not significantly increased; in fact, when measured on a per-user basis, the number of tickets has decreased dramatically since we began allowing personal devices.

With the addition of personal devices, as well as continued growth in corporate devices, the total number of handhelds at Intel more than doubled in 2010. Despite this, the overall number of support tickets related to the use of handheld devices has not shown a corresponding increase. As a result, the number of tickets per user, averaged across corporate, personal, and hybrid models, has decreased by nearly half. In 2009, when we allowed only corporate smart phones, each user generated an average of 0.44 tickets per quarter. By Q1 2011, the average across all handheld users—personal, hybrid, and corporate options—fell to 0.25 tickets per user per quarter.

We attribute the improvement to several factors, including careful planning. We analyzed potential demand and the capacity required to adequately support additional users; this helped to create a stable environment that enabled productive use of personal smart phones. We added Web-based self-support tools and helped to ensure that Service Desk agents received consistent training. We also benefit from economies of scale; some support costs remain the same as the number of users increases.

## New Applications

With employees using more than 23,000 corporate and personal handheld devices, we are delivering the potential to streamline business processes and further increase productivity by extending additional enterprise applications to handheld devices.



**Figure 1. Direct IT costs account for 10 percent of the total cost of a corporate handheld device; the majority of the cost is the service plan.**

Our approach recognizes that people don't use handhelds the same way they use a PC, and that we need to tailor applications to match the capabilities that handhelds provide. The handheld version of an enterprise application may offer only a subset of the features of the PC version.

We are currently testing a speed-dial application that enables employees to dial into conference calls more easily by eliminating the need to look up and retype phone numbers and access codes—which can be awkward when using a handheld device. We are also considering applications that provide conference room booking, network printing, travel booking, employee benefits, and an internal Intel news feed.

Even without specialized applications, handhelds already streamline and enhance use of our internal social networking forums. If employees subscribe to a forum, new posts can be e-mailed to their handhelds, and they can post a response by replying to the e-mail. This enables them to participate in the discussion at any time, from any location.

## CONCLUSION AND NEXT STEPS

**Extending access to Intel data from personal devices has been very successful at Intel. In just over a year, employees have introduced more than 10,000 personal devices into our environment, resulting in significant productivity gains at a low additional cost to Intel.**

Largely due to the addition of personal devices, handhelds have become significant platforms at Intel; out of approximately 80,000 employees, 20,700 are using more than 23,000 devices. To enable even greater benefits, we are developing applications that will extend additional enterprise capabilities to handhelds.

**For more information on Intel IT best practices, visit [www.intel.com/it](http://www.intel.com/it).**

Our groundwork in establishing policies and infrastructure is helping us rapidly expand the program to include new OSs and devices as they reach the market. We are investigating extending the program to personal PCs and are planning a bring-your-own-computer pilot in 2011.

## ACRONYMS

FAQ	frequently asked question
HR	human resources

## FOR MORE INFORMATION

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- "The Future of Enterprise Computing: Preparing for the Compute Continuum"
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