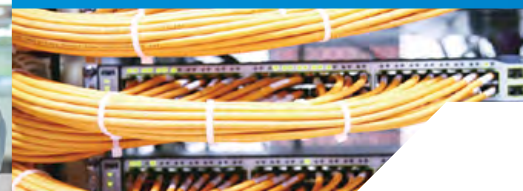# Accelerating Business Growth through IT

2012-2013 Intel IT Performance Report

IT@Intel

Insight and Innovation

This year's IT Annual Performance Report provides insight into Intel's rapidly changing business environment and highlights the value IT continues to deliver. It has been a monumental year of transformation as Intel pursues new opportunities. We are reinventing the PC through the Ultrabook™ device. The industry is shipping the first smartphones and tablets with Intel® processors inside. These new lines of business create urgent, unique IT demands—from manufacturing and supply chain to sales and marketing. By providing insight and innovation, Intel IT is influencing decision making by delivering technology solutions and systems of engagement across all of Intel's businesses. More than ever, IT is poised to advance our company's competitive advantage by delivering results for the unique and evolving business needs of Intel.

Our mission is to "Grow Intel's business through information technology." We did this in 2012 by applying business intelligence and cloud solutions across Intel's business units, resulting in faster time to market for our products and improved efficiency. At the same time, we demonstrated that embracing the consumerization of IT and social computing results in increased employee productivity and collaboration.

As my team and I continue to align the future of our IT organization with Intel's vision, we are focused on achieving three imperatives: deliver operational excellence, achieve business objectives, and transform Intel through insight and innovation.

I invite you to read this report and share your feedback and experiences with us on intel.com/IT. Look for the next online issue of Intel IT's performance report in August 2013.
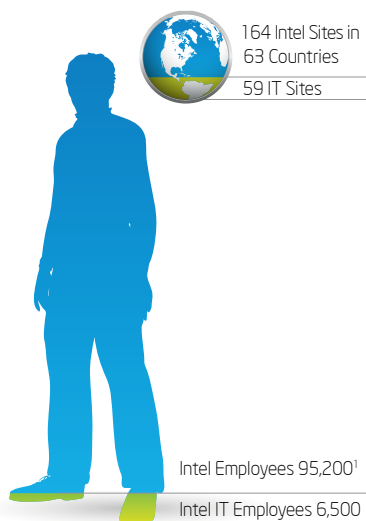
Kim Stevenson, Intel Chief Information Officer
🐦 @kimsstevenson

Our IT Environment

OVERVIEW

164 Intel Sites in 63 Countries
59 IT Sites

Intel Employees 95,200[1]
Intel IT Employees 6,500

IT SPENDING PER EMPLOYEE[2,3]
2012 GOAL: USD 12,000 - USD 15,000

- USD 12,700 (2009)
- USD 14,200 (2010)
- USD 13,500 (2011)
- USD 13,600 (2012) — Goal

(Chart axis: 11,000 / 12,000 / 13,000 / 14,000 / 15,000; years 2009, 2010, 2011, 2012)

IT SPENDING AGAINST REVENUE[4]
2012 GOAL: <2.6%

- 2012: 2.53%
- 2011: 2.36%
- 2010: 2.64%
- 2009: 2.84%
Goal

ENTERPRISE RISK

<1%
MALWARE INFECTION RATE

BUSINESS INTELLIGENCE

25%
Decrease in chip design validation time using big data predictive engines accelerates time to market

CLOUD COMPUTING

Legend: 2012 / 2011

- Days to launch new web application: 70 | <1
- Minutes to provision infrastructure: 45 | <10
- 2-year savings from cloud: USD 15 million
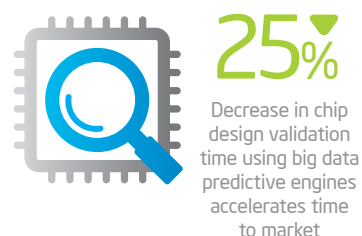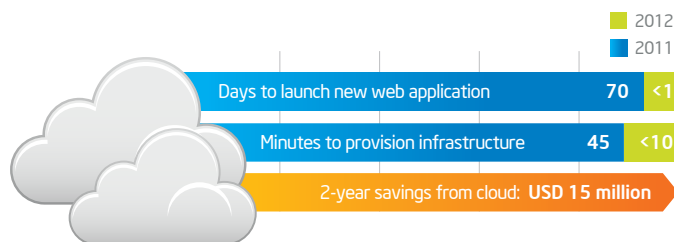
CONSUMERIZATION OF IT

+7 million hours
Employee productivity gain over the last three years

GROWTH OF PERSONALLY OWNED DEVICES
- 8,500 (2010)
- 17,000 (2011)
- 23,500 (2012)
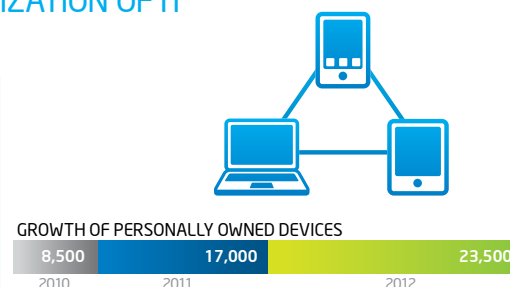
DATA CENTER

DATA CENTERS
- 2012: 68
- 2011: 87
- 2010: 91

STORAGE CAPACITY (PETABYTES)
- 2012: 56.2
- 2011: 38.2
- 2010: 24.9

CLOUD COMPUTING

VIRTUALIZATION[5] (75% GOAL)
- 2012: 75%
- 2011: 64%
- 2010: 42%

TIME TO DEPLOY INFRASTRUCTURE SERVICES
- 2012: <10 minutes
- 2011: 45 minutes
- 2010: 180 minutes

TIME TO LAUNCH A NEW WEB APPLICATION
- 2012: <1 day
- 2011: 70 days
- 2010: 70 days

MOBILE

LAPTOPS WITH SOLID-STATE DRIVES
- 2012: 97%
- 2011: 89%
- 2010: 63%

LAPTOP ENCRYPTION SATURATION
- 2012: 85%
- 2011: 90%
- 2010: 83%

MOBILE APPLICATIONS DEVELOPED
- 2012: 41
- 2011: 25
- 2010: 10

HANDHELD DEVICES IN THE ENTERPRISE
- 2012: 38,500
- 2011: 29,000
- 2010: 19,400

Note: Some 2012 data estimated at time of publishing. | 1,2 Total employee count does not include wholly owned subsidiaries that Intel IT does not directly support. | 3 2010 spending increase due to reorganization. | 4 2009-2012 restated to exclude certain allocations. | 5 Percentage of applications virtualized in our Office and Enterprise environment.

Uncovering the Hidden Potential of Data

Mining and analyzing big data give us deeper insights into business patterns that help drive operational efficiencies in manufacturing, sales, product design, and information security. We are investing in advanced analytics, efficient infrastructure for big data, and self-service business intelligence (BI) capabilities to solve high-value business problems and gain actionable insights in near real time.

Improving the Bottom Line with Advanced Predictive Analytics

Basic BI is the cost of doing business today. The use of advanced predictive models, which enable us to perform more rapid information analysis and decision making, helps Intel stay competitive. For example, we developed a solution to help Intel sales teams strategically focus on large-volume resellers to deliver greater revenue. This engine mines large sets of internal and external sales data, then applies predictive algorithms to identify the most promising reseller partners in specific geographies. In 2012 this solution identified three times as many high-potential resellers in the Asia-Pacific region compared to using manual methods. We estimate up to USD 20 million in potential new and incremental sales opportunities from our 2012 deployments worldwide. More gains are expected from additional deployment in 2013.

Similarly, in our factories, we developed a predictive analytics solution to reduce microprocessor test time. Every chip Intel produces undergoes a thorough quality check, involving a complex series of tests. Our solution uses historical information gathered during manufacturing, reducing the number of tests required and resulting in decreased test time. Implemented as a proof of concept, this solution avoided USD 3 million in 2012 on the testing of one line of Intel® Core™ processors. Extending this solution to more products in 2013-2014, we expect to realize an additional USD 30 million in cost avoidance.

Mining Big Data for Deeper Insights and Savings

We are investing in big data infrastructure to continue our success in predictive analytics, enabling us to rapidly process complex, high-volume data to gain faster insights. In 2012 we deployed a second, multi-tenant big data platform. This is our first platform that combines a third-party data warehouse appliance with Apache Hadoop*, an open source solution.

Like many companies, Intel's raw data is growing exponentially. This is a result of increasingly complex product designs, interconnected devices, Internet services, social media, and growth in user-generated content. Our big data platforms enable us to mine new sources and volumes of information that have previously been too unmanageable to use. Social media and web data are two key examples.

We have demonstrated that a small team of five people skilled in BI can deliver up to USD 10 million in returns in just six months.

We are implementing new use cases for big data analysis where we can expect returns of five to 10 times higher.

Examples include:

- **Optimizing chip design validation.** To maintain Intel's competitiveness in the microprocessor business, we must continue to shorten time to market. This year we partnered with the business to decrease post-silicon validation time by 25 percent. To meet this aggressive goal, we tested two predictive engines to gain insights for streamlining Intel's chip design validation and debug process. Initial test findings indicate these capabilities will be instrumental in meeting our goal and will significantly improve time to market.

- **Rapid detection of information security threats.** We developed an analytics solution that uses our big data platform to predict new information security threats. This platform can process 200 billion server events and provide results in less than 30 minutes, giving us early warning of security threats.

> "Intel IT provided a solution that helps improve the efficiency of Intel's Online Sales Centers to initiate customer engagement, ultimately increasing our team's ability to achieve sales success."
>
> — *Lilian Kubail*
> *Online Sales Channel Manager,*
> *Intel*

25%
DECREASE IN CHIP DESIGN VALIDATION TIME

New Frontiers in Big Data and BI

Intel IT is identifying new use cases to extract even greater value from big data and BI. We have implemented a range of on-demand, self-service BI capabilities for Intel business groups to perform their own analysis and rapidly receive results in the format best suited for their needs. For example, our sales operations BI collaboration portal simplifies data searches using natural language query and dynamically generates reports in seconds on any web-enabled platform. Previously, this process took days and even weeks to perform. The self-service portal provides one central location for searching, creating, and sharing BI content related to revenue and demand. The portal now meets 80 percent of the sales operation team's needs.

Data visualization tools are important in our efforts to empower users through self-service BI. By representing data in a visually meaningful way, data visualization tools can help users more clearly recognize patterns and relationships. We are also using machine learning techniques that will increase automation. These techniques also reduce the need for human judgment in decisions where machines acting on data can operate faster and with better precision.

See more online at:
intel.com/go/ITAnnualReport

Business Growth. New markets. IT competitive advantage.

Growing Intel's Business through IT

Intel's business is changing at a rapid pace, diversifying into new markets, service offerings, and products. Intel IT partners with our business groups to develop innovative tools, services, and support that address the technology requirements for success in these new areas. From increasing productivity and insight across the sales pipeline to supporting the launch of new products, Intel IT plays a key role in accelerating Intel's growth.

35%

INCREASE IN NATURAL SEARCH TRAFFIC WITH NEW INTEL.COM PLATFORM

Photo: (Top) Divya Prakash, Customer Fulfillment Solution Manager; (Bottom) Kent Giard, IT Strategic Planner; Chris Goldfarb, Software Developer

Delivering Insights across the Sales Pipeline

The increased range of Intel's product lines creates a greater need for collaboration and ease of access to information throughout the sales cycle. In 2012, to address these needs, Intel IT introduced the Advanced Collaboration Environment (ACE). This is Intel's first worldwide common platform for customer relationship management. Replacing three disparate tools, ACE gives Intel's sales force instant access to consolidated account information, sales management tools, reporting, and analytics. Today more than 75 percent of the Intel-employed sales force is using ACE to increase sales productivity.

ACE's Online Sales Center Dashboard improves productivity by reducing the time needed to access regional data. Sales directors can now use this interactive online dashboard to monitor real-time account activity. The dashboard shows how many leads are coming in and how many are converting into sales,

estimating the revenue potential of each account. The dashboard also generates a timeline showing historical trends to help sales directors better understand the performance of specific sectors and accounts over time.

Intel IT is also delivering advanced analytics tools that identify new markets and the most likely sales prospects for conversion into qualified leads. Such business intelligence is increasingly important as Intel® processors and technologies find use in a broad spectrum of embedded and intelligent devices.

One of our advanced analytics tools enables Intel sales groups to investigate new emerging markets and market changes. This analytics engine looks at six disparate data sources with information about the global sales of Intel processors to help identify opportunities to sell or upsell within a processor line. Information from this analysis led to a significant increase in sales of the latest high-end processors in the Intel® Core™ processor family.

Supporting New Lines of Business

Intel IT collaborates closely with product development and marketing to test, launch, and support new products and services, including the following examples.

Intel® Anti-Theft Technology Hosting Environment

Intel IT is hosting the Intel® Anti-Theft Technology subscription service within our private cloud, gaining the benefits of our open source capabilities, automation, and economies of scale. This has saved the business approximately USD 200,000 as compared with a similar public cloud environment. In addition to hosting, Intel IT supports this service with application monitoring, performance testing, and a business intelligence dashboard. In 2012 we released major upgrades to the application and service, along with a version for McAfee users called McAfee Anti-Theft Service*. Our role included performance testing, troubleshooting, and a security process review.

"**Intel IT played a vital role** in the design of the first business Ultrabook devices. They helped educate us on the enterprise requirements for mobile devices, tested early products in a real enterprise environment, and provided critical input to ensure that the Ultrabook is the best business-class device—a device that any professional can rely on and be proud to carry."

– Rick Echevarria
Vice President and General Manager, Business Client Platform Division, Intel

50% ▲

INCREASE IN TIME-TO-MARKET AVAILABILITY OF NEW FEATURES OF AN INTEL® COMPILER

ON-DEMAND TECHNICAL RESOURCES FOR BUSINESS AGILITY

As markets move more quickly, the ability to respond rapidly to customer demands and unexpected opportunities is critical to business success. Running a lean organization can make it challenging to respond to opportunities because resources are already dedicated to existing, high-priority projects. Intel IT helps address this problem for Intel business groups by providing short-term resourcing, including a mix of full-time Intel staff and contract workers.

For example, we supplied technically skilled Intel IT employees to an Intel team working on a compiler product, accelerating the time-to-market availability of new product features by 50 percent. This compiler helps developers optimize their code for the integrated graphics in Intel® processors. Intel IT's flexible resourcing helped the product group deliver the solution within the necessary time frame. In addition, our team's expertise in software development enabled an innovation that implements a single source code base across multiple operating systems, further speeding development of the solution.

PLANNING FOR FUTURE IT TECHNOLOGIES

Foundational to Intel's success in the marketplace is its ability to utilize the latest breakthrough technologies that are transforming the way businesses and employees work. To stay ahead of this technological curve, Intel IT has a team of forward-looking researchers and strategists who explore emerging technologies and new business models needed to ensure Intel's long-term competitiveness.

For example, in 2009 we began to explore crowdsourcing and gamification as potential ways to improve demand forecasting. By 2011 these social technologies were in use across various applications within Intel's business environment. Also, in 2011, we investigated using open source software for our private cloud and Hadoop* for handling big data. In 2012 Intel IT adopted both of these technologies to deliver solutions that improve operational efficiency and increase Intel's competitiveness.

Today we are investigating the potential benefits of open source storage solutions, federated cloud, dynamic user experience, and context awareness in mobile devices. Once the value of these emerging technologies can be demonstrated to our business partners, their use may become commonplace within Intel.

First Smartphone based on Intel® Architecture

When the product group for the first smartphones based on Intel® architecture needed help in meeting a tight development schedule, Intel IT stepped in to test builds, fix errors, and make suggestions for improvements. We also supported an internal 500-user trial to help test the smartphone, including the development of a variety of mobile applications. Results at the end of the trial indicated that nearly 80 percent of users—up from the initial 30 percent—would use the smartphone as their primary phone. Our suggestions for critical enterprise-level security and management features ultimately were incorporated into mobile device software that is now commercially available.

Smartphones are a high-velocity market requiring rapid distribution of components to keep pace with technology changes and the addition of new capabilities. To meet the needs of a key phone manufacturer, Intel IT put in place a new, scalable supply chain architecture and logistics model for repair and warranty, on an aggressive, four-month schedule. Working with the manufacturer, we included demand planning and tracking capabilities to meet the fast product-cycle demands of this market. Intel architecture-based phones are now available in a number of countries and will soon be introduced to North America.

Ultrabook™ Device Development

Although the first Ultrabook™ devices were initially designed for the consumer market, the devices' thin, portable form factor made them attractive for enterprise business applications. By giving usability and product feedback directly to the business group responsible for working with Ultrabook device manufacturers, Intel IT helped get the first business Ultrabook device designs to market. Intel IT evaluated and offered suggestions for creating a more robust design to meet the higher standards of the corporate environment, including standards for durability, connectivity, manageability, product life, and security. Business Ultrabook devices with these features are now shipping from a number of manufacturers.

Expanding Intel's Marketing Reach

Corporate web sites today are more than information sources for prospective and current customers and investors. They play a crucial role in connecting people to the brand and expanding their relationship with a company. Last year we reported on Intel IT's partnership with Intel's worldwide sales and marketing organization to re-architect Intel's web site, intel.com. This year we deployed the new design in nearly 40 countries.

The site's new software platform expands Intel's marketing reach by providing the tools required to self-manage and publish Intel's marketing content. The use of these tools reduces the time it takes to publish web content by over 55 percent while reducing web publishing costs by 39 percent.

As evidence of this expanded reach, intel.com broke all Intel North American records for visitor satisfaction and recorded more than 18 million visitors a month worldwide in 2012. In addition, the site's natural search referral traffic reached 70 million over a five-month period in 2012. These results are the highest in Intel's history, increasing natural search traffic by 35 percent compared to similar traffic in 2011.

Intel also received recognition for the site's innovative design. The Internet Advertising Competition recognized the site as the Best Website in the Computer Hardware category, and the Interactive Media Awards awarded it Best in Class in the Science/Technology category.

See more online at:
**intel.com/go/ITAnnualReport**

Business Efficiency. Faster time to market. Lean processes. Automation.

Driving Velocity and Efficiency Across Intel's Business

Intel is entering several new markets that present challenging demands, including shorter product design cycles and time to market. Working closely with the business groups, Intel IT delivers systems and automation to accelerate product development, optimize Intel's supply chain, improve factory efficiency, and streamline business processes.

Moved up to 7th on 2012 Gartner* Supply Chain Top 25 List

2009	2010	2011	2012
25	18	16	7

20%
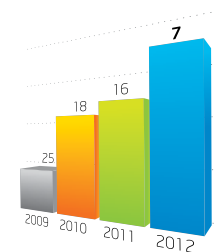
INCREASE IN COMPUTE
THROUGHPUT FOR FASTER
PRODUCT DESIGN

<2 MINUTES

FACTORY SITE FAILURE
RECOVERY TIME

Accelerating Intel® Product Development

Intel design engineers innovate continuously, creating Intel's competitive advantage through increasingly complex silicon chip designs. Intel IT's goal is to enable faster design development and platform responsiveness while reducing cost. To this end, we added Intel® Solid-State Drives to supplement the traditional memory modules in 20,000 servers based on the Intel® Xeon® processor E5 family. In addition, activating the processors' Intel® Hyper-Threading Technology increased compute throughput by 20 percent. This combination enables us to do more with fewer servers and eliminate 3,000 network ports. Overall, we estimate a four-year platform lifecycle savings of USD 20 million, which includes the resultant cost reductions in data center space, power, and cooling.

Similarly, the rapid development of firmware and other software is critical for achieving a competitive advantage in new Intel markets, such as cell phones and tablets. Emulation software enables our software engineers to test and debug firmware and software before finished processors are available. Intel IT is helping to reduce overall product time to market by enabling silicon and software to be developed in parallel. This cross-site global service is also improving utilization by up to 70 percent and contributing toward annual savings of greater than USD 18 million.

Transforming Intel's Supply Chain

Intel fulfills over 750,000 orders a year from 16 factories spread across seven countries and 30 warehouses. To ensure a responsive and efficient supply chain, Intel IT works closely with teams throughout Intel to integrate information systems and to automate processes. In 2012 Intel gained industry recognition for its efficient supply chain, rising from number 16 to 7 in the Gartner Supply Chain Top 25—an impressive one-year leap.

Over the past five years, our supply chain optimizations have delivered 65-percent shorter lead times, 300-percent faster response to customers, and a 32-percent reduction in inventory. For example, we partnered with the business to release a new automated planning system that increases Intel's inventory accuracy, enabling delivery of the right products at the right time. The system eliminates over 1,500 planning spreadsheets, reducing the need for human interpretation of data, improving accuracy, and reducing inventory costs. This solution also increases employee productivity, saving 2,000 employee hours this year, with an anticipated additional savings of 5,500 hours over the next two years.

Improving Factory Availability and Business Continuity

Intel's high levels of factory performance depend on the constant availability of data from factory automation databases. This year we continued deployment of our new high availability database architecture. This solution enables upgrades, maintenance, and operation of mission-critical applications without downtime by using a standby database and a form of redundancy known as *stretch clustering*. By mirroring operations across two data centers with an automatic failover capability, this architecture strengthens our processes for data protection, corruption prevention, and disaster recovery. The average time to recover from a site failure is now less than two minutes compared to our previous recovery time of longer than an hour. The new solution provides a 50-percent cost savings through server reduction compared to our prior high availability architecture and a 25-percent database storage cost reduction through better utilization of space. These

savings totaled USD 800,000 for just three mission-critical database applications. In 2013 we plan to migrate an additional 10 databases to our new high availability architecture.

Streamlining Business Processes

For several years, Intel IT has championed the Lean Six Sigma* approach to achieve significant business efficiency across Intel. In 2012, two solutions stand out.

Accelerating Contract Generation and Management

We built a process-driven contract generation and lifecycle management capability on a service-oriented architecture. This solution reduces the time for contract exchange and acceptance with our external customers from up to three weeks to an average of less than three days. Designed for nearly instantaneous response to contract inquiries worldwide, this solution replaces a cumbersome paper-based system for more than 1,000 Intel customers, ranging from multinational corporations to smaller channel partners. It also enables regulatory compliance at each step in the process. Intel now uses this web-based capability to manage over 7,000 contracts annually across its sales regions.

Automating Self-Tests for Intel's Revenue and Demand Management System

Intel's revenue and demand management system is a complex, high-security application that has hundreds of different terms and conditions. Whenever a change in pricing, discounts, or rebates occurs, this system must be retested for accuracy and compliance. With 158,000 test scenarios, manual testing typically required five employees working seven days. By automating the testing, we now perform release testing in about three minutes, turning a bottleneck test cycle process into a high-velocity solution. In addition, our self-aware, proactive support feature detects errors and notifies the development team of a failure before the user has a chance to call the help desk; this feature increases uptime and reduces problem resolution from hours to minutes.

See more online at: intel.com/go/ITAnnualReport

"**IT is two steps ahead** for the solutions needed in the design of our next microprocessor. They have initiated technical readiness and delivered six radical solutions to improve design workflow. The early engagement between IT and our organization have resulted in breakthrough engineering solutions."

– Kiron Pai
Design Automation Technical Lead, Intel Architecture Group
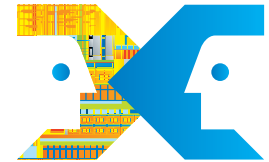
REMOVING LANGUAGE BARRIERS WITH REAL-TIME MACHINE TRANSLATION

Translating materials into different languages can slow down global operations, especially on a social platform. In 2012, we developed and began using our real-time (dynamic) machine translation tool for online customer support forums. Languages include French, German, Portuguese, Simplified Chinese, and Spanish.

This solution, which enables global customers to communicate and collaborate free from language barriers, is currently translating nearly 50 percent of posts. Chief among the tool's innovations is its ability to handle both Intel technical terminology and typical support colloquialisms.

Machine translation is enabling us to implement five new languages in 11 support forums without an increase in headcount. Our solution is showing promise as a way to reduce support costs, improve productivity, and allow a broader audience to participate in conversations. We anticipate using the tool in other Intel forums and programs where the use of multilingual tools could improve collaboration.
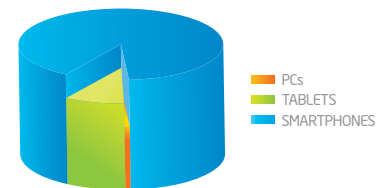
Employee Productivity. IT consumerization. Mobile applications. BYOD.

Embracing IT Consumerization and Mobility

Intel IT continues to embrace the consumerization of IT to boost employee productivity, providing employees greater choice in computing devices and applications. Mobile applications are a major component of our strategy. We have delivered and support a growing number of business applications for these new form factors. Our goal is to deliver a seamless, secure experience for our employees across a wide spectrum of devices by putting user experience first.

PCs
TABLETS
SMARTPHONES

2012 BYOD PROGRAM

Photo: (Top) Romanna Flores, Web Designer; (Bottom) William Miner, Human Factors Engineer

Boosting Productivity through BYOD and Mobile Applications

Our bring-your-own-device (BYOD) program continues to grow, encompassing a broader range of devices and applications. We now have 23,500 devices in the program, a 38-percent increase from 2011. As a result of the program, employees report they are saving an average of 57 minutes daily. This savings equates to an annual productivity gain of about 5 million hours from BYOD in 2012 alone.

To drive increased productivity, Intel IT is focused on developing mobile business applications. Our mobile application development framework streamlines the development of applications and ensures interoperability by using a service-oriented architecture. In 2012 we added 16 mobile applications to the 25 we already support.

Applications such as instant messaging capabilities and a speed dialer for one-click access to Intel conference calls help employees collaborate and save time while on-the-go. Other applications currently in use help employees register for an Intel event, access internal wikis, collaborate through social media tools, and approve purchasing requests.

Improving User Experience across Devices

Many Intel employees use multiple devices throughout their workday. For improved productivity and flexibility, employees must be able to securely access corporate applications and services that are optimized for their devices.

To enable seamless user experiences, Intel IT built an enterprise private cloud to support emerging technologies capable of detecting and providing services based upon an employee's device—its capabilities, location, and preferences. The cloud enables a computing services model that gives employees the ability to use a variety of devices to securely access corporate and personal services, applications, and information.

Through user experience research, we identified a number of use cases for this multi-device usage model. We are currently conducting pilots of several time-saving services, such as:

- **An instant conferencing application.** This solution reduces the number of steps necessary to initiate or join audio, video, or data conferences from mobile devices. The system determines how to best engage each participant based on location, time zone, user preferences, and device type.

- **A business travel locator application.** This tool provides location-based services to help employees at unfamiliar campuses find available Intel conference rooms, printers, colleagues' desks, restrooms, and other locations.

Offering Optimized Mobile PC Platforms

While the goal of our BYOD program is to increase productivity with consumer devices, much of an employee's daily work involves using more powerful platforms with business

applications. For this reason, we continue to refresh our PC fleet on an average of every two to four years with secure, easy-to-manage laptops based on Intel® Core™ i5 vPro™ and Core™ i7 vPro™ processors.

Our mobile employees have the option of using a thin Ultrabook™ device with the remote management and security features of Intel® vPro™ technology as their primary PC. We anticipate many employees will adopt enterprise Ultrabook devices in 2013. In addition, Intel IT uses Windows* 8 on Intel® architecture as the standard operating system for Ultrabook devices and tablets in our enterprise environment. The new touch-screen capabilities, as well as other input methods such as gesture and voice, will create additional productivity gains and options for our employees.

As part of our efforts to shift the value of the PC from a compute device to a complete mobile office environment, we are moving from traditional desk phones to softphones with software-based telephony using voice-over-IP technology. This change will enable our employees to take their phone service with them wherever they go, further enhancing productivity.

See more online at:
intel.com/go/ITAnnualReport
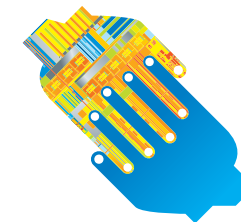
EMBEDDING THE CUSTOMER EXPERIENCE IN IT

In order to deliver the best possible IT services and solutions to our employees and business partners, we are committed to gaining a better understanding of their business needs, day-to-day processes, and how they use IT solutions. We encourage IT employees to participate in job rotations within the business groups they support, so they gain knowledge and build business acumen. To date, over 90 IT employees have completed rotations, resulting in process, service, and design improvements across Intel.

Similarly, a team of user experience experts within IT conduct more in-depth research with specific groups, studying what technology they use, how they interact, and what tasks they perform. Through these interactions, we gain insights to help us design optimized IT solutions that boost employee and business productivity.

For example, our improvements on Intel's purchase order (PO) system show how deeper customer knowledge is creating business value. Intel's employees generate over 200,000 POs per year. By watching how they interact with the system, we discovered ways to streamline the process, integrate eight different systems, and reduce the time to create POs by more than 50 percent.

Driving Business Transformation through the Cloud

Intel IT's cloud innovations are helping transform the business, enabling Intel to gain multi-level benefits across many areas of Intel. These benefits are improving business agility and velocity, while reducing operating costs. To help accelerate revenue growth and deepen engagement with customers, we are extending cloud usage across Intel's business environment and making rapid progress toward our goal of a secure, interoperable, open hybrid cloud.

Engaging with Customers Faster through the Cloud

Social media is one of the web's fastest changing cyberscapes and an effective way for Intel to build stronger relationships with our customers. Intel IT is delivering cost-effective social media capabilities faster to meet business needs. We have transitioned from a custom-developed solution to a commercially available software-as-a-service (SaaS) solution with external cloud hosting and on-demand self-service. Moving our social media platform to cloud services enabled us to deliver 650 percent more social media projects over the last two years. We also saved USD 1.6 million—a 52-percent reduction in overall cost of service.

In addition to social media, Intel marketing teams around the world engage customers through short-term marketing campaigns using agency-developed microsites to promote specific programs, contests, or products. By centralizing the hosting for microsites through an external cloud provider, Intel IT enabled a secure solution for rapidly launching targeted campaigns. This self-service capability can fully provision a hardware stack in less than an hour while saving Intel USD 1.1 million a year. In addition, cloud hosting provides detailed cost estimates, improved tracking of agency users for enhanced security, and the ability to proactively manage site terminations.

### Enabling Faster Application Development

Today's cloud-aware web applications are important for enhancing employee mobility and speeding up the implementation of services. The resulting benefits include faster time to market and revenue from new products. With the goal of accelerating the development time for cloud-aware web applications, we launched our first production pilot for platform-as-a-service (PaaS) on our private cloud using open source software. The result is a 5x reduction in development time through a combination of self-service, on-demand tools and automation. Developers are able to use templates and reusable web services to share resources more easily, allowing them to create applications faster.

In addition, about 10,000 Intel software engineers are now using an application lifecycle management solution created by Intel IT that enables them to begin designing packaged applications for devices in just minutes instead of having to wait a day or longer for the tools they need. This SaaS/PaaS self-service solution built on Intel's private cloud gives Intel software product teams on-demand delivery of application and product lifecycle management, as well as rapid provisioning of an integrated, customized environment for development and testing.

Increasing Service Scalability and Resiliency with Hybrid Clouds

Intel's hybrid cloud hosting strategy enables increased flexibility, allowing us to dynamically adjust capacity within our public and private hosting environments across a wide selection of suppliers. This flexibility is particularly valuable when launching consumer-facing web services, which require high availability and may have unpredictable demand cycles.

Data Center Retrofit
90 to 120 days

Hybrid Cloud
5 to 10 days
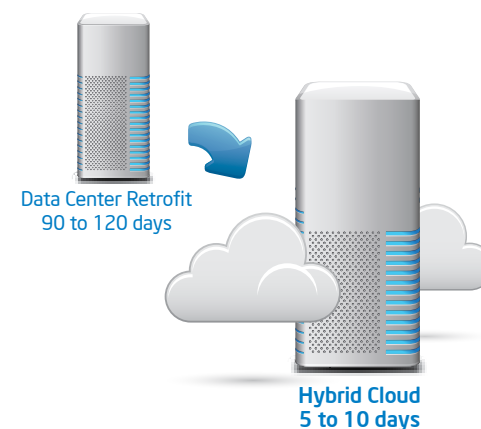
Decrease in time to launch web services in a new location
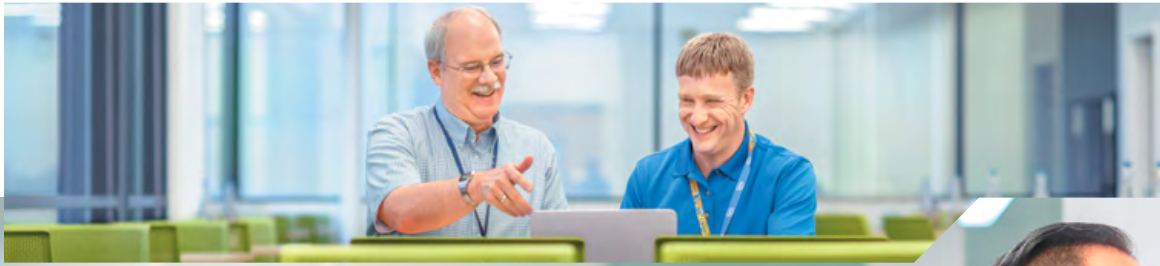
"Partnering with Intel IT was the right choice in helping us move toward a leading-edge infrastructure. This infrastructure allowed us to build fault-tolerant, cloud-agnostic, and auto-scalable applications that satisfied our customers' expectations."

– Mariano Cilia
Engineering Manager
Intel Software and Services Group

In 2012, we launched our first fully integrated, secure hybrid cloud to support Intel's software development teams worldwide. Our hybrid cloud enables our developers to launch services in five to 10 days in a new location instead of having to wait 90 to 120 days for a data center to be retrofitted. Consumer-facing web services can now be quickly scaled for global presence.

Resourcing for the Federated, Interoperable, and Open Cloud

The move to an open hybrid cloud demands new approaches and expertise as we transform data center solutions into consumable services that can be quickly obtained through an open cloud infrastructure. To more effectively implement our open hybrid cloud, we have formed three new disciplines: cloud engineering, cloud system administration, and cloud integration/brokering. This new operating model breaks down traditional organizational boundaries, requiring IT employees in these new roles to develop broad technical knowledge to understand multiple areas of the business. Addressing this requirement will help us move at a fast pace as we embrace more open source solutions, increase collaboration, and look for more opportunities to automate processes.

See more online at:
intel.com/go/ITAnnualReport

Photo: (Top) Gary Gale, Software Engineer; Craig Sterrett, IT Factory Automation Engineer; (Bottom) Esteban Gutierrez, Senior IT Security Specialist

15

Social Computing. Wikis. Blogs. Communities. Crowdsourcing. Engaging customers and employees.

Building the Socially Enabled Enterprise

Intel is embracing social computing as a strategic capability. We use it to build relationships with customers and other audiences, as well as encourage the free flow of information within the company. To help Intel achieve the maximum benefit from its social computing efforts, Intel IT invests in innovative social computing services, tools, and support. These investments are increasing collaboration and idea-sharing internally and externally worldwide.

63%

63% of Intel employees actively engage on our internal social computing platform

Photo: (Top) Tom Birch, Incubator Program Manager; (Bottom) Rachel Stoffregen, Systems Analyst

Building Relationships and Experience through Social Computing

Today, social platforms offer marketers the opportunity to reach customers at a more personal level and forge stronger relationships with their companies. Intel IT supports a wide range of external Intel communities to connect with consumer audiences, IT professionals, software developers, and other groups. With nearly 160,000 total registered users, these online communities recorded over 50 million page views in 2012.

Our communities enable Intel's knowledge leaders to share ideas with peers and select customer groups. We are engaging in conversations, building lasting relationships, and increasing brand relevance. In 2012 we increased the accessibility of these communities through mobile plug-ins. We are also adding new capabilities that will expand our ability to engage with our target audience, including online social sharing and a single sign-in for easy navigation between Intel's online properties.

Blogs are also an important social medium through which Intel experts can engage, influence, and share expertise with other technology professionals. In addition to the Intel community blogs, Intel IT supports Blogs@Intel (blogs.intel.com). This site provides access to a collection of 19 different Intel blogs that are associated with specific topics and audiences.

The number of peak monthly views for Intel blogs in 2012 reached more than 130,000 in March.

For a better user experience, easier posting, and reduced maintenance, we transitioned to an open source platform in 2012. This platform provides regular upgrades, delivering many customization enhancements for both IT and users. Intel IT used this platform to improve the usability of the Intel Free Press web site, simplifying the process of publishing the latest technology and innovation articles for our audiences. This site is now also available as a mobile app with a tile format that makes the site easier to navigate when using small screens.

Engaging Employees with Social Media

As an organization grows, information flow becomes increasingly channeled, limiting the sharing of knowledge and insight. To support our culture of collaboration and ensure the free flow of information, Intel IT supports hundreds of technology groups, forums, and enterprise RSS feeds through our internal social collaboration platform. In 2012 we upgraded the platform's user experience to enable easier navigation, improve search capabilities, and add a mobile interface optimized for touch screens in anticipation of Windows* 8. These changes have helped increase the number of new users by 23 percent in 2012, and we now have over 60,000 employees actively engaging on the social platform.

We also saw a 160-percent increase in wiki growth. Recognizing the increasing importance of using wikis for collaboration within project teams, we upgraded to a high availability environment with advanced disaster recovery. The new environment addressed challenges in storage, technical support, and business continuity preparedness.
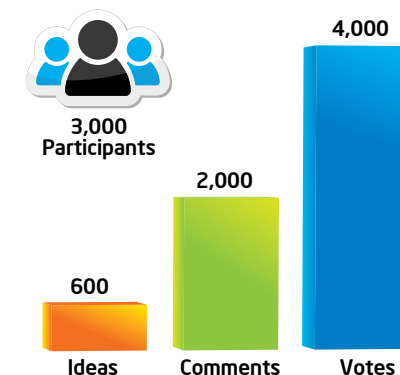
IT tech support is another area that can benefit from a collaborative environment. New improvements to our internal self-support communities provide Intel employees the ability to confer with their peers to solve IT issues, helping to reduce IT support costs and provide a better user experience.

Better Decision Making through Crowdsourcing and Gamification

We continue to experiment with gamification and crowdsourcing techniques to inform decision making. Gamification is proving to be an effective way to aggregate knowledge among employees across the company who have different job roles and levels of expertise. By providing an element of competition and rewards, we are seeing increased participation as people strive for greater accuracy in their predictions.

For example, we developed a game that helps Intel's demand forecasters improve the accuracy of short-term market forecasts for product demand. Intel product groups rely on internal monthly demand forecasts to determine factory production levels. An inaccurate forecast can lead to inventory mistakes that can cost Intel millions of dollars. This game is now regularly used and is proving to be an accurate indicator of aggregate product demand.

Crowdsourcing is another way to tap the collective intelligence of Intel's employees. In 2012 Intel IT deployed Intel's first collaborative ideation platform—an enterprise-wide solution to connect innovators. A crowdsourcing proof of concept using this platform gathered ideas on new ways to collaborate at Intel. Nearly 3,000 participants generated 600 ideas, 2,000 comments, and 4,000 votes on various ideas in just 10 days. Based on the information gathered through crowdsourcing and other research, we are developing a strategic roadmap for delivering new collaboration capabilities in 2013.

See more online at: intel.com/go/ITAnnualReport

Reponses Gathered on Intel IT Crowdsourcing Collaboration Ideation Platform

3,000 Participants

4,000 — Votes
2,000 — Comments
600 — Ideas
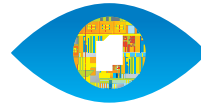
Enterprise Risk. Security. Privacy.
Detect threats. Protect data and IP.

Protecting Intel's Business While We Grow

The quantity and sophistication of threats continue to increase due in large part to the rapid growth of social media, cloud computing, IT consumerization, and mobile technology. The consequences of a security compromise make information risk a boardroom topic at Intel. Through implementation of our "Protect to Enable" security strategy, Intel IT is meeting its goals of providing increased protection while supporting the flow of information and the adoption of new technologies. The full scope of our protection strategy includes enterprise risk, safeguarding privacy, intellectual property (IP), systems availability, and regulatory compliance.

Transforming Security

The potential for information risk exposure at Intel is continuing to grow rapidly, as it is at many companies. For example, the use of handheld devices at Intel has grown 200 percent over the last two years, raising the potential for device theft, IP loss, network compromise, and malware download. We also continue to experience a 35-percent growth in data storage year over year, increasing the amount of stored data and data transfers we must protect.

To handle this increasing exposure, we are delivering new capabilities that rapidly detect compromise through more dynamic and granular controls. In 2012 we made significant progress in implementing our security architecture in four main areas.

- **Identity and access management.** This year we completed a pilot of our dynamic trust calculation model—a solution that enables us to embrace consumerization by supporting devices with differing levels of security. This model adjusts access privileges as an employee's level of risk changes. For example, employees are granted greater access to company information from corporate laptops than from personal smartphones. In the pilot, we enabled access to Intel mobile web applications from personally owned and Intel-owned mobile devices based on our trust calculation model. The full rollout of this technology will include granular levels of trust based on employee privileges, device type, and location. The goal is to provide a security infrastructure that does not hinder mobility.

- **Security business intelligence.** We implemented new solutions that perform real-time correlation of big data to detect security threats faster, boosting our ability to intervene quickly while reducing our risk exposure. One of these solutions enabled a 99-percent increase in efficiency, reducing data collection analysis throughput time from two weeks to 20 minutes. We also built a new, end-to-end platform for big data analytics in less than four months. This platform can process 200 billion server events and provide results in less than 30 minutes. Using this platform, we can monitor traffic from Intel's servers to detect data exfiltration abnormalities and send alerts to security responders. With these and other controls in place, we are currently seeing a malware infection rate of less than one percent.

- **Data protection.** To reduce the risk of data loss through lost or stolen devices, we are issuing mobile business PCs with Intel® Solid-State Drives to provide hardware-based self-encryption. At the end of 2012 we have about 4,000 systems in use. These PCs provide faster data encryption/decryption and deliver improved manageability through Intel® vPro™ technology and McAfee Endpoint Encryption*. As a result of an improved user experience and increased employee productivity, 100 percent of the employees who receive these drives have enabled encryption. A successful pilot of McAfee Deep Defender*, a hardware-assisted security solution, is now leading to production testing on the mobile business PCs of about 500 employees. Based on McAfee DeepSAFE* technology, this solution defends against malware stealth attacks that virus scans or host-based intrusion prevention systems do not detect.

- **Infrastructure.** Our transition from a Network Intrusion Detection System (NIDS) to a Network Intrusion Prevention System (NIPS) is enabling us to achieve detection capabilities across the entire network and giving us the ability to block certain suspicious activity. These new improvements enable investigators to contain malware events within a day.

Industry Recognition

Intel IT won a 2012 CIO 100 Award for its "Protect to Enable" enterprise security strategy for our BYOD program. The development of this security strategy helped Intel IT meet its goals for decreased security risk, increased cost savings, and improved employee satisfaction and productivity. Malcolm Harkins, vice president and chief information security officer, also won the (ISC)[2] Americas Senior Information Security Professional Category award for Intel IT's security implementations of our BYOD program.

Privacy

Intel has long been a proponent for the concept of responsible privacy and data protection. The Intel Corporate Privacy Rules announced in January 2012 define Intel's company-wide privacy compliance practices and are a public demonstration of Intel's commitment to protecting privacy. The rules define how Intel protects privacy and help to raise internal awareness and accountability to Intel's privacy practices. They also provide another legally approved mechanism for international transfers of personal information from the European Union. The rules are based on the same fundamental principles as Intel's existing privacy practices—the most significant difference being that Intel has committed to compliance with the rules worldwide.

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Operational Excellence. Service transformation. Tech support. Data center efficiency.

Delivering Better Service at a Lower Cost

Intel IT is constantly seeking ways to improve services. At the same time it is also looking to reduce operational costs and invest in new capabilities to help grow the business. By completing our transition to a service-based model, we have made major strides in driving down costs while improving internal customer service. We have also kept our focus on driving efficiencies in our data centers by addressing areas of improvement that deliver the greatest gains in quality, velocity, efficiency, and capacity.

4%

BUDGET SHIFT FROM "RUN" TO "GROW/TRANSFORM" IN 2012

Photo: (Top) Craig Sterrett, IT Factory Automation Engineer; (Bottom) Kathy Oace, Client Services Manager; Venkatesh Kambhammettu, Service Transformation Development Manager

Driving Service Transformation

In 2010, we started an extensive program to adopt an IT service management model to dramatically improve operational results. As the program concludes this year, we have transformed our IT landscape.

Previously organized largely by function, such as engineering and supply management, we created service teams, assigning employees distinct roles and implementing standard processes. Each IT service delivers a customer-driven outcome and is grouped as a portfolio with other services that share a common purpose, such as supporting a factory or sales force. This model is further optimized by integrating Lean practices into every process. As a result of these changes, we are deploying services five times faster than in 2011.

Aligning to services enables us to fully comprehend the true cost of our offerings, perform meaningful industry benchmarking, and make deliberate IT investment decisions. We now have greater visibility into operations costs and financial trade-offs, which helps us to identify areas for process improvement and cost reduction. This frees up resources to invest in new capabilities to help propel Intel's growth in existing businesses or to expand into new markets. In 2012, a growth year with a flat budget, Intel IT was able to shift 4 percent of its budget dedicated to keeping the company running to capabilities that enable Intel to grow and innovate.

Providing Exceptional Technical Support

Quickly solving IT issues has a direct impact on employee productivity. Over the past three years, our Technical Support Desk reduced support staff by 52 percent, while achieving a 51-percent reduction in the time to resolve problems. These achievements reinforce our commitment to improving agent efficiency while elevating service quality and supporting an expanding number of technologies.

We have improved service efficiency by gaining a deeper understanding of user experience and making strategic changes to our technical support workflows. For example, we observed that 10 percent of IT support calls came from administrative assistants, even though this job role accounts for only 1 percent of the employee population. Because administrative assistants play a key role in helping many other employees, improving our service to this group affects productivity across a larger employee population. To improve support, we now provide expedited service levels, tailored contact channels, and support staff specifically trained to meet their unique needs. These and other enhancements have resulted in achieving 95-percent overall customer satisfaction this year.

We continue to look for ways to optimize workflow and improve service. We recently conducted a pilot study where we separated repetitive service request work from less predictable troubleshooting and repair work.

The results demonstrated that our service request team can expect to double their output. This new workflow will free highly skilled team members to take on more complex support and business analytics work. We are also using predictive analytics to identify and automate high-frequency service requests.

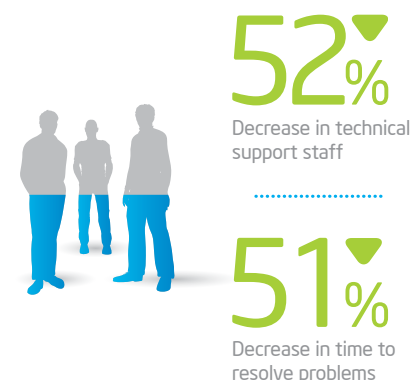## Driving Efficiency and Innovation in Our Data Centers

Our goal is to deliver world-class data center services at a lower cost. We identify the areas for improvement that will deliver the greatest return on investment by comparing current data center capabilities to a "best achievable model." Aspiring to this model, in 2012 we delivered measurable improvements on these key performance indicators:

- **Cost.** We achieved significant efficiency in data center operations by reducing the number of data centers from 87 to 68 in 2012, closing some and reclassifying others. Further cost reductions came from refreshing older compute and storage servers with fewer higher-performing servers based on the latest Intel® Xeon® processors and Intel® Solid-State Drives (Intel® SSDs). Our compute server refresh—coupled with performance-enhancing capabilities such as our NUMA Booster system software and Intel SSDs used as fast swap space—is enabling us to exceed our 10-percent target for reducing cost per compute unit.

We saved more than USD 11 million by increasing utilization in 2012

17% INCREASED COMPUTE UTILIZATION[1]

5% INCREASED STORAGE UTILIZATION[2]

TOP500® SUPERCOMPUTER SITES
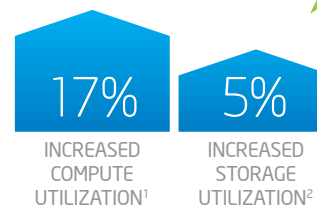
Intel IT's high-performance compute server cluster based on the Intel® Xeon® processor E5-2670 achieved Top 500 ranking in 2012.

52% ▼ Decrease in technical support staff

51% ▼ Decrease in time to resolve problems

2012 Top Results from Intel IT Service Transformation

For example, in our data centers dedicated to silicon design computing, we are exceeding our target and achieving a 23-percent savings.

- **Utilization.** By improving the accuracy of how we measure utilization, we discovered we had unused data center infrastructure capacity, which we were able to utilize. In our Office and Enterprise environment we increased compute cloud utilization from 38 to 55 percent, saving USD 5.6 million in 2012. We also increased our storage utilization from 45 to 50 percent in our Design Computing environment, resulting in savings of USD 5.9 million. Ultimately, we were able to reach 90 percent of our 2012 utilization goals.

- **Service quality.** We achieved an increase from 68 to 75 percent in delivering zero impact from major incidents. We also stayed close to our 80-percent goal for customer satisfaction for Design Computing, our largest internal customer segment. This segment uses nearly 80 percent of our infrastructure capacity to serve over 27,500 engineers.

See more online at:
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PC MANAGEMENT

UP TO

50%

FASTER PROCESSING OF
PC SERVICE REQUESTS

We reduced PC service request processing time by streamlining workflow and automating manual steps. We also used Lean principles to achieve a 75% time reduction in managing surplus PC assets.

ASSET MANAGEMENT
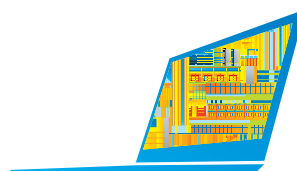
A 36% increase in managed assets through our standardized configuration platform, which replaces eight databases and improves asset tracking through remote management capabilities.

SECURITY AUTHORIZATION

100%

100% service-level agreement compliance in response time to new requests. We automated the workflow and replaced 30 online forms with nine wizard-driven service requests.

NETWORK CONNECTIVITY

A 39% incident reduction as a result of resolving four root causes. We applied knowledge management and problem analysis tools to discover and resolve the underlying issues behind numerous enterprise network connectivity issues.

PLATFORM HOSTING

40%

TIME REDUCTION FOR
INCIDENT RESOLUTION

A 40% time reduction in incident resolution. We improved response time by realigning configuration items and establishing clear lines of accountability between the service teams supporting the compute service and the platform hosting service.

SMALL FORM FACTOR
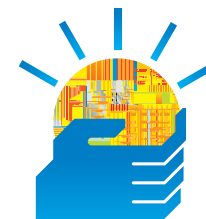
A 49% reduction in service incidents, while the overall number of handheld devices grew approximately 33%. We improved the quality of our support articles, increased self-help options and automation, and applied proactive problem management to reduce incident volume.

Looking Forward

2012 was a year of transformation for Intel. As partners to the business, Intel IT helped pave the way for new lines of business. We also expanded Intel's use of social computing and brought new insights by applying predictive analytics to big data.

Every year brings new opportunities for Intel IT to drive enormous value. To meet the fast-paced and changing requirements of the industries in which we compete, we continually strive to deliver bold, innovative solutions. Our ability to evolve quickly to meet new challenges helps improve Intel's competitiveness and speed our products to market.

As Intel IT looks forward, we see 2013 as a year of continuing our innovation and investment in five key initiatives.

- **Cloud computing.** To support the increasing speed of our business, we plan to expand the use of private and public clouds. This expansion will enable us to deliver newly developed business services in minutes.

- **Social computing.** We will increase our collaboration capabilities, enabling employees to share information internally and externally across the globe.

- **Mobile applications.** We will increase employee productivity by providing more ways to access services and technologies anywhere, any time, on a variety of devices.

- **Big data and predictive analytics.** To gain new insights that advance the business, we will better utilize the wealth of information we have today.

- **Enterprise Security.** While protecting Intel's critical assets, we will enable a wide range of devices and application delivery models.

As we continue to pursue these and other innovative solutions to meet our business needs, we will share them with you. We also look forward to learning from your experiences and challenges as well. Be sure to join us in the journey at www.intel.com/IT.

Photo: Venkatesh Kambhammettu, Service Transformation Development Manager

Learn more about Intel IT Best Practices at
intel.com/IT

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(intel®)