Case Study

**PCs with Intel®
vPro™ Technology**

Healthcare

Intel® vPro™ Technology Offers Johns Hopkins New Ways to Increase the Efficiency of Remote PC Management

Remote management capabilities can help a centralized IT group support a large, dispersed fleet of PCs

Challenges	• Improve remote management of more than 9,000 desktop PCs used for patient care, laboratory work, medical research, and administration across 25 Maryland sites
	• Streamline PC diagnostics and repair to reduce the time and costs of deskside visits while improving uptime for doctors, researchers, and staff
	• Increase the accuracy of asset inventory and patch management throughout the network
Solutions	• The Johns Hopkins IT Group worked with Intel® Solution Services to evaluate the remote PC management capabilities of Intel® vPro™ technology[1] for PC diagnostics and repair, asset management, and security
Benefits	• Test results showed that Intel vPro technology could help Johns Hopkins save an average of 20 percent on software support costs and 17 percent on hardware support costs yearly, while producing a 32 percent return on investment over four years
	• Johns Hopkins could significantly reduce the time to diagnose and repair PC problems, helping doctors and staff remain productive
	• Improved asset inventory and remote patch deployment capabilities could help ensure that all PCs receive software deployments and are secure from threats
	• The ability to power up and power down computers could provide significant energy savings

Because Intel vPro technology can provide technicians with an exact hardware inventory and help to pinpoint a hardware issue remotely, even before the first deskside visit, Intel vPro technology could also eliminate the second deskside visit often needed to fix a hardware problem. Tests showed that remote diagnostics would reduce the total repair time by 10 minutes for each failure.

Intel vPro technology and Intel AMT could also help the Johns Hopkins DCS team to improve discovery and inventory of its large and dispersed collection of PCs, helping to ensure complete patch deployment. DCS could find and inventory systems on the network using a targeted TCP/IP scan that provides an accurate inventory of all Intel vPro technology–enabled systems on the network. The out-of-band (OOB) capabilities provided by Intel AMT would enable DCS to collect an accurate inventory even if PCs were powered down. That OOB functionality could also help ensure a complete deployment of software patches. DCS administrators could check the virus and management agent versions on a managed client even if the system is power off. In addition, the OOB capabilities would enable administrators to power on systems and use third-party tools to discover software assets on PCs.

Intel consultants performed a cost analysis that showed the Johns Hopkins DCS group could save an average of 20 percent on software support costs and 17 percent on hardware support costs yearly, while producing a potential 32 percent return on investment over four years. In addition, the ability to power down computers once maintenance tasks are performed could save Johns Hopkins from one third to one half of current consumption for these PCs. "The benefits of cost savings go far beyond our IT group," says Romero. "Johns Hopkins can use the money we save on administration and power consumption to invest more deeply in clinical care, research, and education."

Intel vPro technology helps Johns Hopkins users stay focused on groundbreaking work

"We anticipate that Intel vPro technology will allow us to quickly respond to whatever problems arise and enable us to work more efficiently in conducting regular management and maintenance," says Romero. "As a result, we should have more resources available to pursue new and novel solutions to challenges."

Ultimately, using PCs with Intel vPro technology will help the DCS group refocus on the types of pioneering initiatives that define Johns Hopkins. "Doctors and researchers continue to come to us for value-added services," says Sears. "The more we can eliminate computer problems and make IT a utility, the better we can provide those next-generation services. Our job is to help researchers and clinicians focus on their groundbreaking work. Intel vPro technology can help us spend less time and money keeping PCs running and more energy on providing the support they need."

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Steve Sears
Director, Desktop
Computing Services Group
Johns Hopkins

Technology is central to the success of The Johns Hopkins University and The Johns Hopkins Hospital in delivering outstanding teaching, patient care, and research. Doctors, staff, students, and administrators rely heavily on 30,000 PCs for everything from placing clinical orders and accessing electronic medical records to completing class assignments, conducting scientific research, and scheduling courses. Though the Johns Hopkins IT group keeps the fleet of PCs running and secure with a combination of remote management software and deskside visits, the staff is eager to explore strategies that would help them reduce support burdens and enable them to devote more time to innovative projects.

The Johns Hopkins Desktop Computing Services (DCS) group is a subsidiary of the IT organization that supports 9,000 desktop PCs in The Johns Hopkins Hospital, pediatrics and surgery departments, remote sites, and other labs, clinics, and administrative areas. That collection includes both public workstations in clinical areas and private workstations used by administrators and researchers. "It is extremely challenging to support such a large number of users across the hospital and university with a relatively small number of IT administrators," says

Robert Romero, senior director of information technology at Johns Hopkins. "Our DCS group needs to manage a multitude of configurations and platforms."

Nevertheless, providing that support is critical to the organization's success. "The PCs are used for everything from scheduling and billing to fetal monitoring and radiology diagnostics," says Steve Sears, director of the Johns Hopkins DCS group. "Keeping these PCs up and running is vital to the operation of our healthcare system."

Assessing the Situation

The DCS group needs effective ways to accelerate diagnostics and repair of both software and hardware problems. To ensure the smallest amount of downtime for doctors and staff, the DCS team is often forced to conduct deskside visits, even for software-related issues. "Our goal is to reduce the time technicians spend in the clinical areas," says Sears. "These are extremely busy areas, and we do not want to get in the way. Whether we need to re-image the operating system or exchange a failing hard drive for a new one, we generally go in, replace the computer, and analyze the problem later. We need to make sure the doctors and staff can stay productive."

Key Technologies

- Intel® vPro™ technology facilitates a full range of remote management functions, including asset management, diagnostics and repair, security enhancement, and more

- Intel® Active Management Technology (Intel® AMT) includes persistent nonvolatile memory and a hardware-based communication channel to enable administrators to collect information and provide service, even if the computer is powered down or inoperable

While replacing PCs minimizes end-user downtime, deskside visits are time-consuming and costly for the DCS group. Round-trip travel for a deskside visit can take up to 75 minutes for remote sites. Though yearly costs for software maintenance are high, hardware maintenance is even more costly, since hardware problems more frequently require deskside visits.

The DCS group also needs a way to improve platform discovery to ensure both regulatory compliance and the correct payment for maintenance fees. "We have technicians inventory the hardware assets every three days," says Sears. "But it takes us a good deal of time that we could be spending on other projects. Our platform discovery is also less than 100 percent accurate. Computers need to be on for us to get the correct inventory, and that is not always the case."

Having a way to effectively control the power state of PCs would help not only with asset inventory but also with patch management. "If someone takes a computer out of the domain or shuts it off, we cannot ensure complete deployment of a new patch," says Sears. "That is the biggest issue for software distribution failure: We cannot always see the machines. We currently ask users to leave their PCs on around the clock so we can deploy patches over night, but then we waste energy. We would be very interested in a way to turn computers on and off remotely so we can perform our tasks and then shut down PCs to conserve energy."

Delivering the Solution

Intel® Solution Services worked with the DCS team at Johns Hopkins to find ways to improve centralized management of its dispersed computer systems. After assessing the current challenges facing the organization, the Intel consultants suggested exploring Intel® vPro™ technology. Intel vPro technology comprises a

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Robert Romero
Senior Director for Information Technology
Johns Hopkins

collection of components, including processor, chipset, networking, and other technologies, which work together to provide extensive remote management capabilities. Using PCs with Intel vPro technology,

	Current State	Intel® vPro™ Technology
Discover hardware assets	• Performed every three days, taking many hours of effort • Less than 100 percent of assets discovered	• Discovery any time, remotely • 100 percent of in- and out-of-band assets discovered
Discover software assets	Not currently performed	1 minute per managed client
Heal hardware problems	• 80 percent of hardware failures require one deskside visit • 50 percent require two deskside visits	1 deskside visit
Heal software problem	• 20 percent of software failures require a deskside visit	• All re-imaging and re-installation done remotely in minutes or hours
Protect PCs by detecting antivirus agents	• In-band detection only • Energy wasted, leaving all PCs running	• In- and out-of-band detection • Ability to power PCs on and off remotely, saving energy

Source: Johns Hopkins Medical Institutions Final Report, Intel® Solution Services, September 2006

Figure 1. Test results for Intel® vPro™ technology compared with Johns Hopkins baselines
(Intel vPro® technology™ statistics extrapolated from tests conducted by Intel® Solution Services)

the Johns Hopkins IT group would be able accelerate diagnostics and repair, improve the efficiency of asset inventory, and more completely deploy patches.
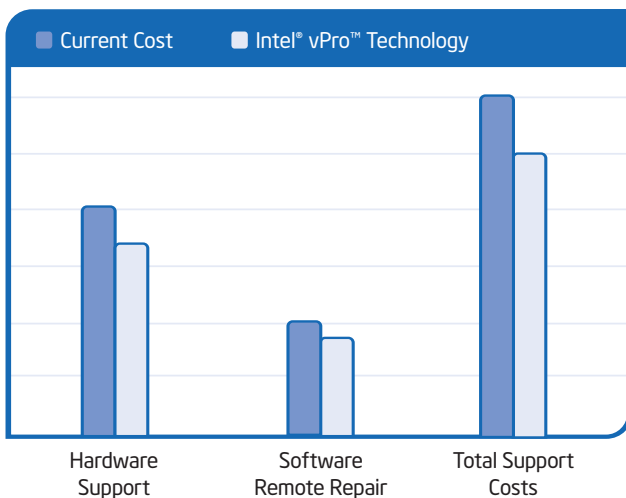
Intel vPro technology features Intel® Active Management Technology (Intel® AMT) in its platform hardware. Intel AMT provides a remote communication channel that is always available to authorized IT personnel—even if the computer is not functioning properly. As long as the PC is plugged into a power source and connected to the network, administrators can access the computer. Intel AMT also includes persistent, nonvolatile memory where critical information can be safely stored. In addition, Intel AMT uses mutual authentication between client and console along with encrypted communication to help guard against unauthorized access to networks and PCs. With higher levels of security and functionality than wake-on-LAN tools, Intel AMT lets administrators safely collect vital hardware and software asset information even when a PC is powered down, reconfigured, or inoperative.

Intel® vPro™ technology accelerates diagnostics and improves asset inventory

Intel Solution Services designed a test environment that used five PCs equipped with Intel vPro technology. PCs were controlled through a single server running third-party systems management software, LAN management software, and diagnostic utilities. The Intel consultants demonstrated ways in which Intel vPro technology could address the specific challenges facing Johns Hopkins.

Tests showed that by using Intel vPro technology, the Johns Hopkins DCS group could significantly reduce the time to diagnose and repair software issues. Systems that fail due to software or operating system corruption could be remotely repaired or re-imaged without requiring a deskside visit. By adopting PCs with Intel vPro technology, Johns Hopkins could reduce the time to fix problems by 10 percent.

Intel® vPro™ technology and Intel AMT could also help the Johns Hopkins DCS team to improve discovery and inventory of its large and dispersed collection of PCs.

Current Cost **Intel® vPro™ Technology**

Hardware Support   Software Remote Repair   Total Support Costs

Source: Johns Hopkins Medical Institutions Final Report, Intel® Solution Services, September 2006

Figure 2. Potential estimated savings with Intel® vPro™ technology

Find a business solution that is right for your company. Contact your Intel representative or visit the Intel® Business/Enterprise Web site at intel.com/business or intel.com/go/digitaloffice or visit the industry solutions-specific sites at: intel.com/business/bss/industry.

For more information about Intel vPro technology, visit intel.com/vpro.