Streamlining PC Management with Intel® vPro™ Technology and Microsoft® System Center Configuration Manager 2007 SP2

White Paper

Intel® vPro™ Technology

Microsoft® System Center Configuration Manager 2007 SP2

Executive Summary

Microsoft® System Center Configuration Manager 2007 Service Pack 2 (SP2), with integrated support for Intel® vPro™ technology, enables IT professionals to create a robust client infrastructure that helps enhance security, increase IT efficiency, reduce costs, and increase productivity through centralization of management. This joint Intel and Microsoft solution lets users capitalize on the power and mobility of today's client computers, while allowing their IT organizations to centrally manage and secure the client hardware and software.

System Center Configuration Manager 2007 SP2 offers customers advanced tools and technologies to implement best practices for desktop infrastructure optimization. Notebook and desktop PCs with Intel vPro technology deliver enhanced maintenance and management capabilities along with robust hardware-based security enhancements. The native support for Intel vPro technology in System Center Configuration Manager 2007 SP2 provides a tightly integrated, joint solution for operating system-independent manageability and over-the-network security even when a PC is powered off, the operating system is unresponsive, or software agents are disabled. Microsoft System Center Configuration Manager 2007 SP2 and Intel vPro technology thus comprise a good choice for gaining enhanced insight into, and control over, a client IT infrastructure—letting customers spend smart, do more, and be more secure.

This white paper provides a high-level overview of the technical benefits of Intel vPro technology and System Center Configuration Manager 2007 SP2 and includes examples that show how an IT staff can use the integrated solution to reduce management overhead and increase productivity.

Microsoft® System Center Configuration Manager 2007

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Introduction

The main client infrastructure management challenges faced by IT staff today include the need to increase productivity and streamline operating system deployment while reducing costs. IT professionals want to reduce the complexity and costs for operating system deployment by consolidating the number of operating system images, reducing the number of "high-touch" operations, and addressing any application incompatibilities. IT departments also want to control electricity costs, reduce the number of expensive desk-side service visits, and eliminate inaccurate inventories due to operating system rebuilds, replaced hard disks, or other hardware or software changes.

An IT refresh comprising the deployment of Intel® vPro™-based hardware and Microsoft® System Center Configuration Manager 2007 SP2, a member of the latest generation of Microsoft enterprise technology, can help IT organizations meet these critical IT challenges.

A hardware and software refresh can lower operating costs by more than 30 percent,[1] while letting workers accomplish twice as much as they did on their older computers. Benchmarking studies show a 200+ percent performance increase when comparing new desktop computers to desktop computers that are more than three-years old.[2] Desk-side visits to resolve IT issues can be reduced by more than 80 percent for Intel vPro-enabled PCs.[3] Patching Intel vPro-enabled PCs occurs 42 percent faster, reducing security exposure[4]; case studies show that it is possible to achieve 98 percent patch saturation in only four hours, instead of the typical five days.[5] Available in notebook and desktop PCs from most major vendors, hardware-based Intel vPro technology delivers security and manageability on a chip, independent of any operating system that may or may not be installed on the target device. A company can recoup its incremental Intel vPro technology PC investment in less than a year,[6] making a hardware and software refresh a sound financial investment.

Intel vPro technology extends the reach and capabilities of the Microsoft System Center Configuration Manager 2007 SP2 management console to meet IT management and troubleshooting challenges. Out-of-band management in Configuration Manager 2007 SP2 provides powerful management control for computers that have the Intel vPro chip set and Intel® Active Management Technology (AMT) by letting an administrator connect to a computer's management controller when the computer is turned off, in sleep or hibernate modes, or otherwise unresponsive through the operating system. (In contrast, in-band management is the traditional approach, in which an agent runs in the full operating system on the managed computer and the management controller accomplishes tasks by communicating with the management agent.) The out-of-band management console in Configuration Manager 2007 SP2 provides powerful administrative control for AMT-based computers, including tasks such as power on and power off, check system information and status, boot from an alternative location, reconfigure BIOS settings, and run commands and character-based diagnostic applications. Some out-of-band management tasks are performed from the Configuration Manager console, while others require running the out-of-band management console that is supplied with Configuration Manager 2007 SP2. Out-of-band management uses Web Services for Management (WS-MAN) technology to connect to the management controller on a computer.

IT organizations can now protect, maintain, and manage notebook and desktop PCs even when a PC is powered off, the operating system is unresponsive, hardware (such as a hard drive) has failed, or software management agents are missing. With integrated support for Intel vPro technology, Configuration Manager 2007 SP2 lets an IT administrator remotely maintain PCs almost any time and from anywhere in the organization; an IT administrator can take more accurate asset and hardware/software inventories, resolve software and operating system problems faster over the network, and accurately diagnose hardware problems—all without leaving the Configuration Manager 2007 SP2 console. The IT staff can then spend less time on routine tasks so that they can focus resources where they are most needed, maximizing their team's efficiencies and bolstering the company's bottom line.

A Complementary Solution for PC Management

System Center Configuration Manager 2007 SP2 integrates with the powerful hardware-based capabilities of Intel vPro technology to provide a seamless management experience for notebook and desktop computers. An IT administrator can remotely resolve more software problems, diagnose hardware and software failures faster, and reduce double counting of PCs during discovery. The integrated solution lets an IT administrator protect a company's wired or wireless PCs more effectively and remotely manage the PCs more efficiently from the Configuration Manager 2007 SP2 console, even when the PCs are powered off or the operating system is inaccessible, enhancing the ability to automate processes, decreasing service costs, improving overall network security, and increasing user uptime. IT organizations can manage PCs throughout their entire life cycle, regardless of changes to the operating system or hardware configuration.

System Center Configuration Manager 2007 SP2 improves on the Intel AMT integration provided in Configuration Manager 2007 Service Pack 1. Configuration Manager SP 2 adds full feature support for computers that have the Intel vPro chip set and AMT firmware versions 4 and 5. In addition to the native support for key Intel vPro

Why Microsoft System Center Configuration Manager SP2 and Intel vPro Technology are better together:

- Integrated, seamless enterprise management support for Intel vPro technology-enabled PCs
- Enhanced remote management security over TLS-secured channel
- Reduced administration overhead due to fewer desk-side visits
- Increased productivity with fewer interruptions to users
- Reduced power costs with scheduled remote power on and system shutdown

remote management and remote control technologies available with Service Pack 1 and AMT firmware versions 3.2.1, 4.0, and 5.0, the following new features are now also supported:

- Wireless management, with up to eight wireless profiles (for mobile only).
- Endpoint access control. New support for the 802.1x authentication protocol, which authenticates a user or computer before allowing it onto the network (for both wired and wireless networks).
- Audit logging, which was introduced in AMT version 4 and provides a mechanism to capture the occurrence of significant AMT events and who performed those actions. With SP2, it is now possible to configure and make use of the AMT audit logs.
- Power policy extensions.
- Data storage through non-volatile memory or third-party data store (3PDS).
- Support for new operating systems (Windows® 7 client, Windows Vista® SP2, Windows Server® 2008 SP2, and Windows Server® 2008 R2).

Remote Management Challenges

One of the most time-consuming activities for IT organizations is the management of networked PCs. In the past, it was difficult to manage computers if they were powered off, their operating systems were not responding, or their management agents were missing. Because of this, many common notebook and desktop PC management tasks, such as installing security patches and system updates, had to be performed during work hours, which often interrupted users and reduced employee productivity.

At the same time, inefficient, costly, and time-consuming desk-side visits were required for systems that couldn't be located, diagnosed, repaired, or remediated from the service center. Ongoing operational expenses, such as software and security updates, maintenace, and support, can represent 70 to 80 percent of the total cost of ownership (TCO) of a PC,[7] and thus have a significant impact on a company's bottom line.

What are your Main Remote Management Challenges?

- Save money by reducing help desk costs and reducing power consumption
- Secure your environment and help ensure compliance
- Ease your Windows 7 deployment

What IT groups need is a way to remotely inventory, manage, and troubleshoot notebook and desktop PCs regardless of their operating system or power states. IT professionals need a solution that enables increased efficiency by allowing management and troubleshooting from the service center and not at the desk side.

Solve Remote Management Problems

System Center Configuration Manager 2007 SP2 with integrated support for Intel vPro technology provides IT professionals with a powerful new solution for remote access management challenges. By employing Intel vPro technology hardware-based features for out-of-band management, IT organizations can now use System Center Configuration Manager 2007 SP2 to discover, access, power on, reboot, control, and remediate Intel vPro-enabled notebook and desktop PCs without leaving the Configuration Manager 2007 SP2 console at the service center or help desk.

It is now possible to diagnose and resolve problems even if the operating system is not responding, and it is possible to monitor system health even if management agents are missing on the target PC. In addition, IT professionals can access critical system information even if hardware (such as a hard drive) has failed.

IT organizations can also securely power on (over a Transport Layer Security [TLS]-secured out-of-band channel) any AC-powered PC for off-hours servicing, such as installing updates and critical security patches.

Combined with System Center Configuration Manager 2007 SP2, new hardware-based capabilities can help speed PC fleet management processes, improve system automation, and significantly reduce service costs throughout the entire notebook and desktop PC infrastructure.

Table 1 summarizes how the joint solution can help IT professionals solve some common IT challenges.

USE CASE	IT CHALLENGES	SYSTEM CENTER CONFIGURATION MANAGER WITH INTEGRATED INTEL® VPRO™ TECHNOLOGY	ENABLES YOU TO
Software Updates	▪ Unencrypted wake-on-LAN not trustworthy across multiple subnets ▪ Manual updates and patching for PCs that are not powered on ▪ Requirement for users to leave PCs powered on after hours for maintenance ▪ Keeping all systems in software update compliance with agreed-upon timeframes	▪ Encrypted, reliable remote power on of PCs over multiple subnets and multiple segments, enabling critical patching or updating ▪ Power on PCs remotely and securely for maintenance or other off-hours service ▪ Power on a PC to ready it for a user ▪ Cycle power to make sure software updates that require a computer restart have completed their installation	▪ Eliminate virtually all manual updates ▪ Speed up security updates, and meet or exceed patch saturation service level agreements ▪ Reduce windows of vulnerability ▪ Speed up application and operating system deployment ▪ Automate off-hours maintenance even for PCs that are powered off ▪ Reduce power consumption costs ▪ Improve user uptime
Remote Diagnosis and Repair	▪ Remote diagnosis can be frustrating for users and IT technicians ▪ Sometimes requires an expensive desk-side visit or shipping system to service depot ▪ Cannot usually diagnose operating system or application problems if the operating system is not responding ▪ Cannot usually diagnose hardware failures remotely or accurately	▪ Securely boot PC to clean state ▪ Redirect PC's boot device to another device, such as a remediation drive, regardless of system state ▪ Use protected console redirection to remotely troubleshoot PC, even if operating system is unresponsive or hardware has failed ▪ Access hardware asset information and persistent event log at any time ▪ Remotely watch as BIOS, drivers, and operating system load to identify problems ▪ Access BIOS configuration settings ▪ Push replacement files or rebuild operating system	▪ Eliminate most desk-side visits traditionally required to resolve operating system problems or diagnose hardware failures ▪ Minimize user interruptions and down time ▪ Increase accuracy of remote diagnostics for software and hardware problems ▪ Improve response times ▪ Proactively diagnose or repair systems that are indicating early signs of failure during off hours to minimize disruption to users
Remote Hardware Asset Tracking	▪ Manual inventories required when PC power is off or the management agents are altered or missing ▪ Inaccurate database records if operating system is rebuilt, hard drive is re-imaged, or hardware or software configuration has changed	▪ Accurately discover PCs even after reimaging or configuration changes ▪ Access accurate hardware information from BIOS regardless of operating system state, hardware failures (such as hard drive failures), or PC power state	▪ Eliminate virtually all manual hardware-asset inventories ▪ Accurately discover that "last 10%" of PCs ▪ Eliminate double reporting of PCs ▪ Reduce costs for software licensing and maintenance contracts
Deploying a New Operating System	▪ Operating system deployments are complex ▪ Can impact user productivity ▪ Usually requires physical access to the PC, which involves a desk-side visit and reduces the productivity of IT staff	▪ Deploy new operating systems after normal work hours ▪ Minimize user and IT staff productivity impacts, and maximize deployment saturation in the shortest period of time ▪ Perform remote operating system deployments on bare- metal hardware ▪ Perform remote operating system deployments on PCs where the operating system or PC agent are non-responsive ▪ Meet defined or mandated deployment timelines regardless of a PC's power state or connectivity (wired or wireless)	▪ Use Intel vPro technology to initiate a remote Pre-boot Execution Environment (PXE) boot or an integrated power-on command ▪ Can perform in-band deployment or out-of-band deployment

Table 1 Common IT Challenges and Solutions

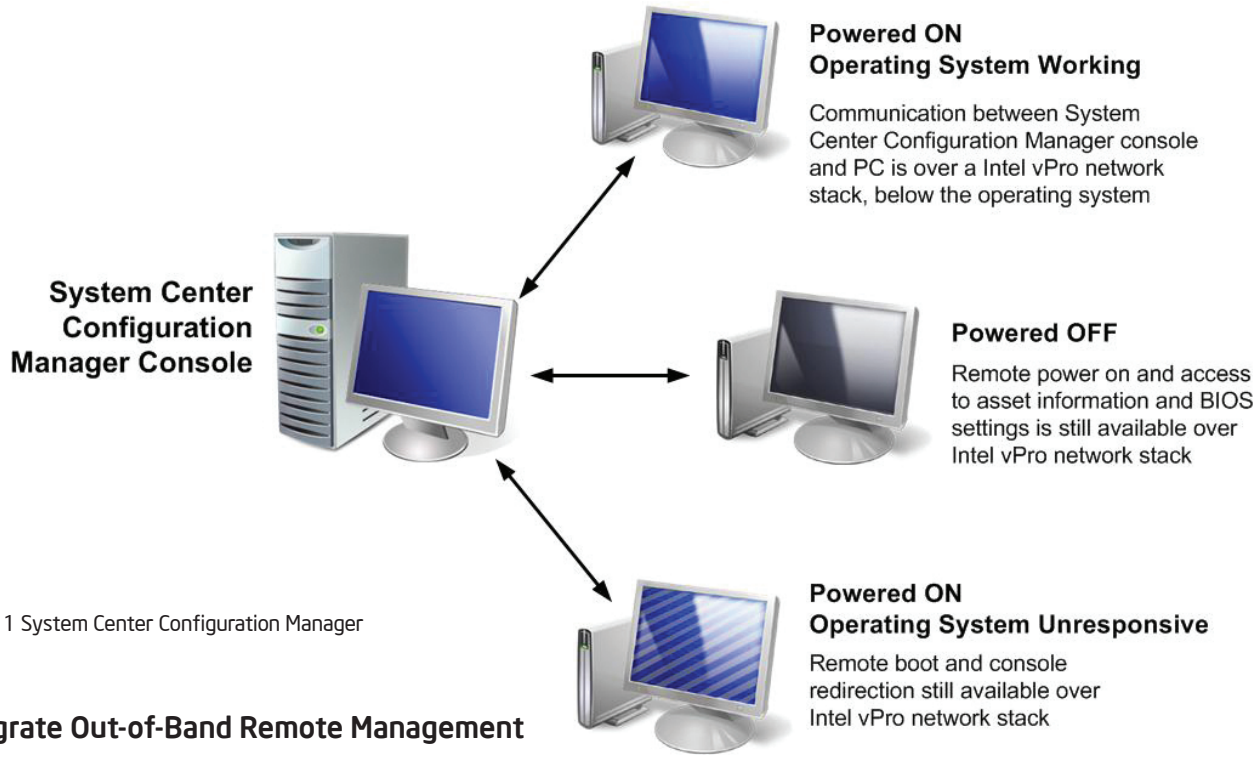


Figure 1 System Center Configuration Manager

Integrate Out-of-Band Remote Management

Support for Intel vPro technologies is a standard part of every Microsoft System Center Configuration Manager 2007 SP2 solution, which means no add-ons are required.

A key benefit of Configuration Manager 2007 SP2 is the integrated remote configuration for Intel vPro technology, which lets an IT administrator simplify deployment and initialization.

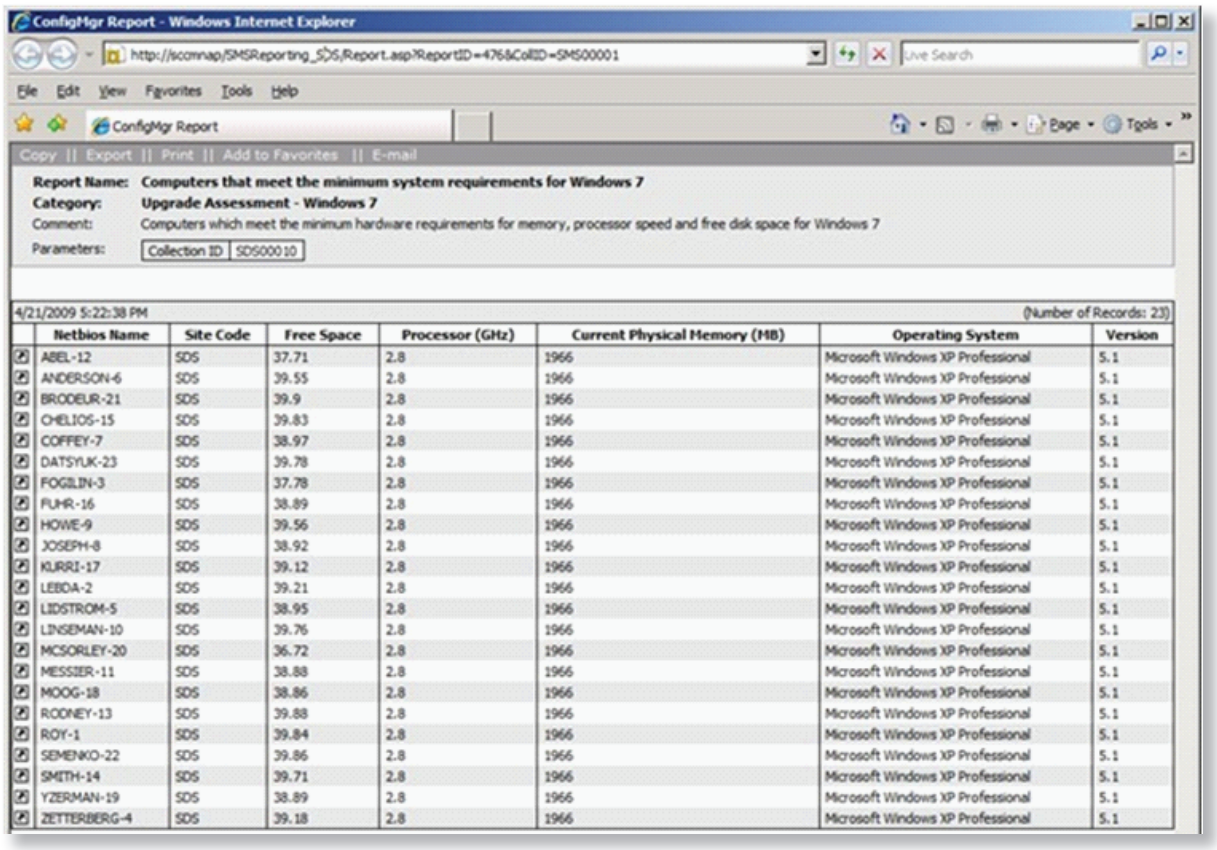
Another significant advantage is the TLS-secured power-on capability of PCs equipped with Intel vPro technology. TLS-secured power on is more secure than unencrypted wake-on-LAN (WOL) technology. TLS-secured power on provides the ability to securely and remotely power on, power off, or reset PCs to update security software or push a critical patch, even if the PC is powered off at the start of the update cycle.

The Configuration Manager 2007 SP2 out-of-band console can be used to take advantage of Intel vPro hardware-based capabilities to speed up remote problem resolution. The integrated out-of-band console enables:

- **Secure console redirection.** Remotely control a PC without user intervention to remotely install missing or corrupted files, troubleshoot without user assistance, and service remote hard disks.
- **Secure remote boot or redirected boot.** Boot a PC to a clean state or redirect the computer's boot device to another location, such as clean image on the local machine, a CD-ROM at the help desk, or an image on a network share or drive.
- **Access to BIOS configuration settings.** Get to BIOS settings anytime to remotely correct settings changed by users, solve application conflicts, or change a PC's primary boot device.
- **Access critical system information anytime.** View critical hardware asset information anytime, even when hardware (such as a hard drive) has failed or to identify missing hardware components. New in Configuration Manager 2007 Service Pack 2, the hardware compatibility reports have been updated to provide a single view that lets administrators see which computers in their environment are capable of running Windows 7, as shown in the figure that follows.

Advantages of System Center Configuration Manager 2007 SP2 and Intel vPro:

- Integrated, seamless enterprise management support for wired and wireless Intel vPro-enabled PCs
- Enhanced remote management security over TLS-secured channel
- Reduced administration overhead due to fewer desk-side visits
- Increased productivity with fewer interruptions to users
- Reduced power costs with scheduled remote power-on and system shutdown events
- Ability to deploy Windows 7 over the network, even to wireless PCs that are powered off



Netbios Name	Site Code	Free Space	Processor (GHz)	Current Physical Memory (MB)	Operating System	Version
ABEL-12	SDS	37.71	2.8	1966	Microsoft Windows XP Professional	5.1
ANDERSON-6	SDS	39.55	2.8	1966	Microsoft Windows XP Professional	5.1
BRODEUR-21	SDS	39.9	2.8	1966	Microsoft Windows XP Professional	5.1
CHELIOS-15	SDS	39.83	2.8	1966	Microsoft Windows XP Professional	5.1
COFFEY-7	SDS	38.97	2.8	1966	Microsoft Windows XP Professional	5.1
DATSYUK-23	SDS	39.78	2.8	1966	Microsoft Windows XP Professional	5.1
FOGELIN-3	SDS	37.78	2.8	1966	Microsoft Windows XP Professional	5.1
FUHR-16	SDS	38.89	2.8	1966	Microsoft Windows XP Professional	5.1
HOWE-9	SDS	39.56	2.8	1966	Microsoft Windows XP Professional	5.1
JOSEPH-8	SDS	38.92	2.8	1966	Microsoft Windows XP Professional	5.1
KURRI-17	SDS	39.12	2.8	1966	Microsoft Windows XP Professional	5.1
LEBDA-2	SDS	39.21	2.8	1966	Microsoft Windows XP Professional	5.1
LIDSTROM-5	SDS	38.95	2.8	1966	Microsoft Windows XP Professional	5.1
LINSEMAN-10	SDS	39.76	2.8	1966	Microsoft Windows XP Professional	5.1
MCSORLEY-20	SDS	36.72	2.8	1966	Microsoft Windows XP Professional	5.1
MESSIER-11	SDS	38.88	2.8	1966	Microsoft Windows XP Professional	5.1
MOOG-18	SDS	38.86	2.8	1966	Microsoft Windows XP Professional	5.1
RODNEY-13	SDS	39.88	2.8	1966	Microsoft Windows XP Professional	5.1
ROY-1	SDS	39.84	2.8	1966	Microsoft Windows XP Professional	5.1
SEMENKO-22	SDS	39.86	2.8	1966	Microsoft Windows XP Professional	5.1
SMITH-14	SDS	39.71	2.8	1966	Microsoft Windows XP Professional	5.1
YZERMAN-19	SDS	38.89	2.8	1966	Microsoft Windows XP Professional	5.1
ZETTERBERG-4	SDS	39.18	2.8	1966	Microsoft Windows XP Professional	5.1

Figure 2 Configuration Manager Report

Insight, Control, and Management Scenarios

Configuration Manager 2007 SP2 enables IT organizations to perform a wide range of remote management activities that in the past would have required a desk-side visit, IT department intervention, or shipping the device to the service depot. The built-in, integrated support for Intel vPro technology-enabled notebooks and desktops helps IT staff save time, reduce costs, and increase productivity.Table 2 describes some of the Intel vPro hardware-based capabilities supported by System Center Configuration Manager 2007 SP2.

Enhanced support for network authentication for wired and wireless PCs is new in System Center Configuration Manager 2007 SP2. Out-of-band management now supports Wi-Fi Protected Access (WPA)-Enterprise and WPA2-Enterprise for network authentication and encryption. The encryption method can be either Temporal Key Integrity Protocol (TKIP) or Advanced Encryption Standard (AES). Most enterprise wireless network environments require 802.1x authentication to gain access to the network. To allow Intel AMT out-of-band connectivity to the network before the operating system boots, the 802.1x trusted root certificate can be loaded from a file or pulled directly from your certificate authority (CA) infrastructure.

The Remote Authentication Dial-In User Service (RADIUS) client certificate (depending on the authentication method chosen) permits the choice of a desired certificate template from a Microsoft® Enterprise Certificate Authority, enabling Intel vPro out-of-band connectivity to work seamlessly with Microsoft® Public Key Infrastructure (PKI) environments.

The System Center Configuration Manager 2007 SP2 Out-of-Band Management Console

The out-of-band management console—a dedicated management console that is run from the Configuration Manager 2007 SP 2 console or from a command prompt to initiate out-of-band management tasks, including IDE redirection and serial-over-LAN sessions—provides comprehensive administrative control over Intel vPro-enabled computers.

Using the out-of-band management console, IT organizations can perform tasks such as powering PCs on and off, viewing system information and status, booting from alternative locations, viewing and configuring BIOS settings, and running commands and character-based diagnostic utilities in a pre-operating system boot environment.

Hardware-Based Capability of Intel® vProTM Technology	What It Does
Remote power off/power on/reset	Securely and remotely power on, power off, or cycle a PC's power using a TCP/IP-based secure connection between the Configuration Manager console and the Intel® vProTM-enabled computer.
Remote/redirected boot	Lets you securely (over a TLS-secured channel) remote boot PCs to a clean state or redirect the PC's boot sequence to another device, such as a clean image on the network or on local storage, a CD at the help desk, or an image on a remote drive. In addition, PXE redirection can be used to easily reinstall an operating system, including Windows 7.
Console redirection	Secure console redirection to remotely control a PC without user participation. This enables IT organizations to control the PC before the operating system boots so that pre-operating system boot tools and diagnostic devices can be run.
Anytime access to BIOS settings	Allow access to BIOS settings anytime, regardless of the current power state of the PC. Administrators can also make changes to the BIOS and save the changes when using the boot-to-BIOS option.
Anytime access to critical hardware asset information	Access hardware asset information (such as manufacturer and model number) at any time by using the System Information view in the System Center Configuration Manager out-of-band console.
Persistent Universal Unique Identifier (UUID)	Lets administrators identify a PC anytime, even if a PC's power is off, the operating system has been rebuilt, hardware or software configuration has changed, or the hard drive has been re-imaged. The UUID can be used to track assets in Configuration Manager throughout the life cycle of the managed device.
802.1x support	802.1x support provides an authentication mechanism for devices wishing to communicate via a port. If the authentication fails, it disallows further communication via the port. 802.1X is a simple form of Network Access Control (NAC).
Ability to migrate to Windows 7	Migrate to Windows 7, wired or wireless links, regardless of power state.

Table 2 Capabilities Provided by System Center Configuration Manager 2007 SP2

System Center Out-of-Band Management Console enables:

- Remote power on/power off
- Remote views of system information and status
- Remote viewing and configuration of BIOS
- Remote execution of commands and diagnostics in pre-operating system boot environment

What is unique about the out-of-band management console is that it lets administrators perform these tasks even if the operating system has not booted, the hard disk has failed, or the operating system is unresponsive—all from within the Configuration Manager 2007 SP2 console.

Note that the out-of-band management scenarios discussed below require that Intel vPro technology be enabled on the wired or wireless notebook or desktop PCs being managed through the console. To be enabled, the wired or wireless PC must contain Intel vPro technology hardware and the Intel vPro technology must be activated.

Improve Update Penetration with Scheduled Power-On Commands

One of an IT organization's most important tasks is keeping systems up to date with the latest application updates and security patches. On average, up to 20 percent of businesses' PCs fall out of compliance with their IT organization's software update policy.[8] What IT professionals need is a way to increase update and patch penetration, while at the same time making sure that the work of employees is not interrupted.

System Center Configuration Manager SP2 with integrated support for Intel vPro technology can help an IT staff stay in compliance with patch saturation policies.

The System Center Configuration Manager 2007 SP2 out-of-band management console enables Intel AMT secure power on, which is integrated with Configuration Manager advertisements for software updates; this can help achieve higher success rates for getting updates installed within a specified time frame.

For example, suppose a company's security policy requires that all computers running the Windows® operating system have critical security updates installed within two weeks of the update's release. The IT staff sees a 100 percent success rate on servers, but only sees an 80 percent success rate on desktop systems, despite the fact that the updates were deployed within one week of the update's release. The IT staff discovers that the desktop computers failed to update for a variety of reasons, such as:

- Some users are on vacation or on sick leave, and their computers are not powered on.
- Some computers are powered on only when needed for a specific application or process (these computers were not powered on at the time of updating), and some users power off their computers during lunch or at the end of the day.

Suppose the company's security policy prohibits sending unencrypted WOL packets over the network, and there is not enough time to find each powered-off computer, power it on, and install the required software updates to meet the compliance goals. Even if security policy didn't forbid WOL, the WOL packets are broadcast messages that do not traverse subnets without requiring alternations of the network infrastructure.

System Center Configuration Manager 2007 SP2 enables a better solution.

The Configuration Manager 20007 SP2 administrator can monitor the update installation. After identifying computers that have not installed the required updates, the administrator can initiate a new deployment containing these updates and schedule the computers for WOL using power-on commands only; this avoids unsecure WOL packets. With this approach, the IT group can get critical updates installed on most computers within one week, giving them time to find and update any desktops that still require updates (perhaps because the computer went into sleep mode before receiving the update deployment or because there was no power available to the computer).

Using the combination of software updates with a deadline for the majority of computers, WOL with power-on commands for the few computers that are turned off, and manual intervention for the minority of computers that remain noncompliant, the IT staff can easily meet its compliance levels every month.

Manage PCs Remotely

Mobile workforce management is a key challenge for IT organizations. Laptops are now outselling desktops, and workers are using laptops on the road or at home or are otherwise not connecting to the corporate network as often. A Forrester Research survey showed that 82 percent of survey participants agreed or strongly agreed that they need access to enterprise applications while away from their desks. A full 81 percent of companies surveyed found that the benefits of improving employee mobility have equaled or exceeded the investment their company has made to date, and 65 percent of companies agreed or strongly agreed that the number of mobile employees is increasing faster than the number of non-mobile employees.[9] Clearly, a mobile workforce is here to stay, and IT departments will need to adapt to managing their systems. To this end, Gartner Research has found that using comprehensive management tools and implementing processes and best practices for notebook PC management can reduce the total cost of ownership of a notebook PC by up to 23 percent.[10] As such, effective management can reduce costs dramatically for organizations with large numbers of mobile PCs; a fully managed notebook fleet can greatly improve a company's bottom line.

Use System Center Configuration Manager SP2 for Internet-based client management.

With Configuration Manager 20007 SP2, it is possible to remotely manage in-band clients, as shown in the figure that follows. This eliminates the need for virtual private networks (VPNs), and enables the deployment of software updates to remote users while they are traveling or working at home.

Deploy Operating Systems and Applications to Bare-Metal Computers

IT IT professionals often need to install operating systems and applications on bare-metal computers. This can lead to high administrative overhead, since an engineer usually needs to be present for the installation.

However, with the help of Configuration Manager 2007 SP2 and its integrated support for Intel vPro technologies, the number of costly on-site visits for operating system installations is significantly reduced.

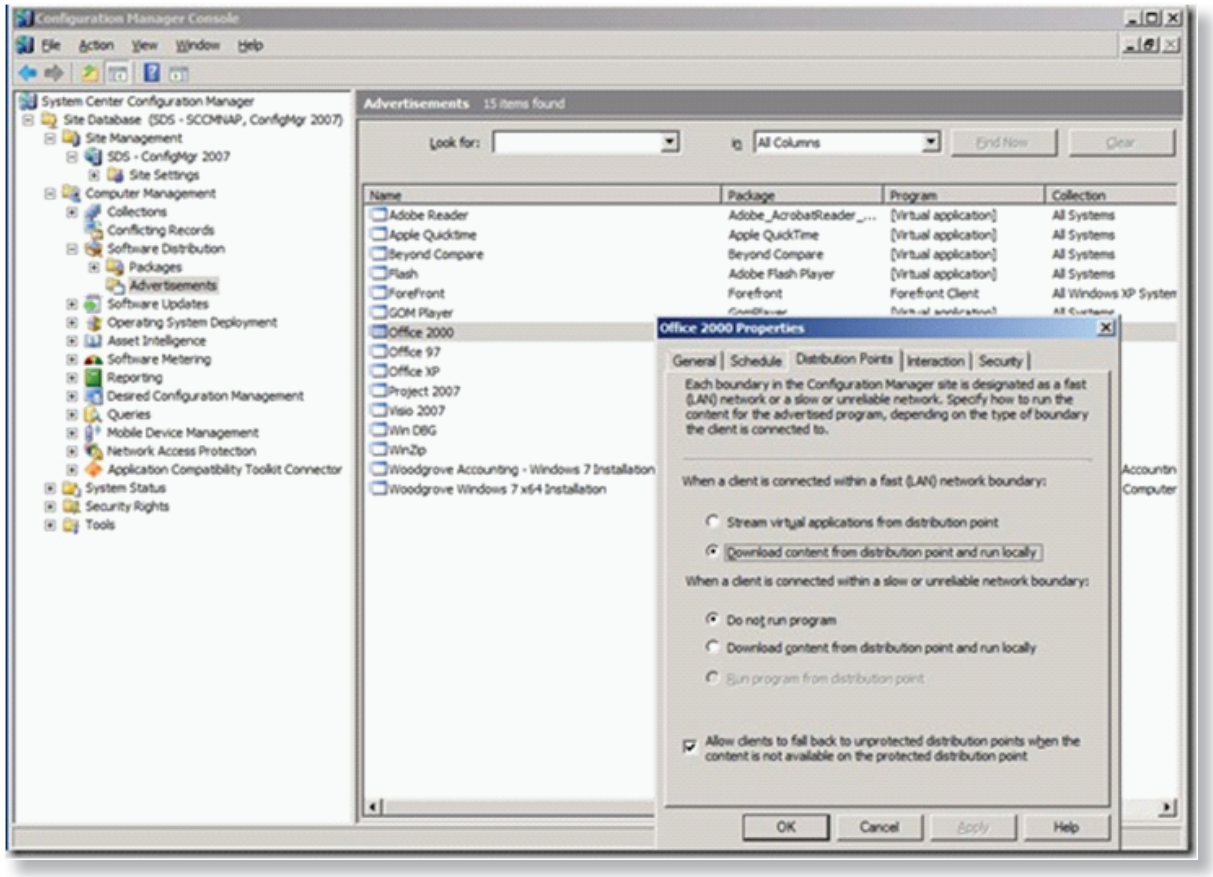


Figure 3 Configuration Manager Console

Fully provision Intel vPro-enabled bare-metal computers with operating systems and applications using the out-of-band management console.

For example, suppose the IT staff has received several new computers at an organization's branch locations. The company's security policy does not allow deployment of these computers using a PXE installation, and it is time-consuming and cost-prohibitive to send an engineer to each location to manually install the operating systems and applications. The IT staff has an image file containing the required operating system, custom applications and application settings, and the Configuration Manager 2007 SP2 client. All the IT staff needs is a way to apply these images directly from the service center.

The System Center Configuration Manager 2007 SP2 remote console lets the IT staff connect to Intel vPro-enabled bare-metal computers. The engineer only needs to open the console, select the IDE redirect (IDE-R) option, and enter the network path to the image to install the operating system, custom applications and settings, and the Configuration Manager client.

Power On Computers to Install Applications

IT professionals often need to install applications and perform routine maintenance on client systems. Many groups prefer to do this during off hours so that users can continue their work undisturbed. The challenge is how to perform these tasks securely from a remote location at the service center to reduce administrative overhead. Because security is an important consideration, WOL is not a viable option.

Configuration Manager 2007 SP2 with integrated support for Intel vPro technology can help to solve this problem.

For example, suppose the IT staff needs to install a non-standard application on five computers. The IT staff can create a collection in Configuration Manager 2007 SP2 for these five computers and then configure an advertisement to install the application as soon as possible. The IT staff can also establish a time frame when none of the computers are powered on and when no work will be interrupted. An engineer can then use the Configuration Manager 2007 SP2 remote management console to select all the computers in the collection and remotely power on these computers over a TLS-secured connection.

Use remote power on to install applications from the service center without interrupting users.

The IT staff can then use the Configuration Manager 2007 SP2 console to monitor the progress of application installation. If required, the IT staff can power off each computer individually after the installation is complete using the Configuration Manager 2007 SP2 out-of-band management tools and simply selecting the shutdown option.

Power Off Computers to Protect against Worm Propagation

Security is a serious issue, consuming a great deal of a company's time and money. According to research, hackers make over 6,000 attempts each month to gain access to corporate systems, at a cost of $22,000 per incident, or, based on the number of hacking attempts, $4,528,000 per year.[11] PricewaterhouseCoopers (PwC) surveyed 4,900 IT professionals in 30 countries and found that in a single year almost 39,363 human years of productivity will be lost worldwide because of computer viruses. The cost to U.S. firms with more than 1,000 employees for battling viruses and computer hacking amounts to $266 billion, or more than 2.5 percent of the nation's gross domestic product; the worldwide cost for viruses and computer hacking is approaching $1.6 trillion.[12] Clearly, companies need to be concerned about security threats, as they can severly impact the company's bottom line.

IT departments need up-to-date security systems to minimize their organization's risk. IT departments also need the ability to react quickly. For example, computers sometimes need to be shut down immediately to prevent the propagation of network worms. The IT staff needs to be able to power off these computers quickly from the network operations center, since every minute of delay can have a negative security impact.

The Configuration Manager 2007 SP2 out-of-band management console can enable the IT staff to power off computers from remote locations as simply and quickly as pressing the computer's power button.

For example, suppose a company has an intrusion detection system (IDS) that monitors for suspicious network and server activity. During off hours, the IDS generates an alert indicating a network worm has attacked one of the servers. While company policy mandates that users power off their computers before leaving the office, there are occasionally some computers with the power left on. The security officer on call is concerned that the network worm might have the characteristics of a zero-day exploit and would like to be sure that all PCs are shut down immediately to minimize the spread of the worm and allow time to more deeply investigate the problem.

Power off computers in an emergency with out-of-band remote power off.

Configuration Manager 2007 SP2 with integrated support for Intel vPro technology can help in this scenario.

The security officer can use the Configuration Manager 2007 SP2 out-of-band management console to immediately power off all of the desktops. In this way, the risk to the computers is significantly reduced, as is the potential costs of restoring compromised computers to a healthy state.

Re-Image Problematic Computers

IT organizations sometimes find themselves unable to repair a computer with malfunctioning software. It is often more cost effective to re-image the computer instead of continuing with extended troubleshooting sessions that require user assistance. The Configuration Manager 2007 SP2 out-of-band management console can help the IT staff, not only by informing the re-imaging process, but also by reducing administrative overhead by enabling re-imaging from the service center.

For example, a company may have a help desk policy stipulating that issues interfering with user productivity must be resolved within a pre-defined time period. The IT staff chooses to re-image problematic computers, since data is not stored on PCs. The IT department then needs to dispatch an engineer to the site or arrange to have the PC brought into the service center.

Re-image malfunctioning computers remotely with out-of-band boot redirection.

System Center Configuration Manager 2007 SP2 with integrated support for Intel vPro enables a better solution.

With the System Center Configuration Manager 2007 SP2 out-of-band management console, help desk engineers can locate the problematic computer and use IDE redirection to boot from an installation disk. For a solution with even lower overhead, the help desk engineer can take advantage of the out-of-band management console's PXE boot option. System Center Configuration Manager

2007 SP2 with integrated Intel vPro support provides several options for re-imaging computers without local access, even if the computer's operating system is unresponsive.

Configure BIOS Settings

According to industry studies, desk-side and service center calls make up only a small percentage of PC problems but consume a majority of the budget.[13] This is due to the high cost of desk-side visits, which can cost much more than resolving the problem remotely.

One common reason for a desk-side visit is to reconfigure BIOS settings. Since the BIOS is accessible only in a pre-operating system boot environment, the IT staff must either dispatch an engineer to the desk side or request assistance from the user.

> The out-of-band management console in System Center Configuration Manager enables remote BIOS viewing and configuration.

With the Configuration Manager 2007 SP2 out-of-band management console, there is another option. Suppose the help desk receives a call about a new computer booting incorrectly. The computer was purchased from a new vendor, and there is a suspicion that there might be a problem with the vendor's default BIOS settings.

An engineer needs to check the BIOS settings on this computer from the service center. Using the Configuration Manager 2007 SP2 out-of-band management console, the engineer can establish a serial-over-LAN (SOL) connection from the console and connect to the computer to view the BIOS display. If the wrong disk was configured for booting the computer, the engineer can then change the boot device settings in the BIOS, save the settings, and restart the computer.

With the help of the out-of-band management console, the engineer can quickly resolve a problem that would have otherwise required a time-consuming and costly desk-side visit.

Troubleshoot a Non-Responsive Computer

There are times when IT professionals face problems that are too difficult or time consuming to diagnose. In most of these cases, the Configuration Manager 2007 SP2 out-of-band management console can be used to re-image the computer. However, there may be situations where company executives prefer to have their computers repaired instead of re-imaged. The IT staff needs to be able to respond to these special requests.

> Serial-over-LAN enables your help desk engineers to remote boot specialized tools to solve difficult to troubleshoot problems over the network.

The Configuration Manger 2007 SP2 out-of-band management console can be used to remotely troubleshoot a non-responsive computer through tools that run outside of the operating system.

For example, suppose one of a company's vice presidents calls the help desk to report a "hung" computer. The help desk staff can use the System Center Configuration Manger 2007 SP2 out-of-band management console to perform remote diagnostics. The computer can be set to boot to a SOL connection, redirecting the boot device to an image on the network containing a diagnostic utility. The diagnostic utility may find that the hard disk contains a number of bad sectors, which have caused the machine to act erratically and hang. The help desk engineer can then step the vice president through the process of repairing the bad sectors, and the help desk can close the service ticket. The IT staff can also make a note of the faulty hard drive and put together a requisition to get a replacement.

Deploy Windows 7

One task of the IT staff is to migrate the desktop and notebook PCs in their fleet to the newest operating system version when replacing PCs. This typically requires moving user files off the old computer; laying down the new operating system; configuring the computer with updates, packages, and applications; and then restoring the user files and settings.

> Microsoft System Center Configuration Manager 2007 SP2 with support for Intel vPro technology can ease migration to a new operating system such as Windows 7.

System Center Configuration Manager 2007 SP2 with Intel vPro support can automate the process and eliminate the need for desk-side visits to the target PCs—even if some of the client computers are wireless—minimizing IT overhead and making deployment as fast, smooth, effective, and efficient as possible. The Task Sequencer included in Configuration Manager 2007 SP2 and shown in the figure that follows helps to truly separate the hardware from the operating system and application layers by using the boot.wim and install.wim formats from the Windows operating system and then providing a console UI experience to link user data migration, applications, and other settings.

For example, suppose a company decides to upgrade from Windows® XP to Windows 7 to take advantage of the many new features and benefits that Windows 7 offers. Some of the company's computers

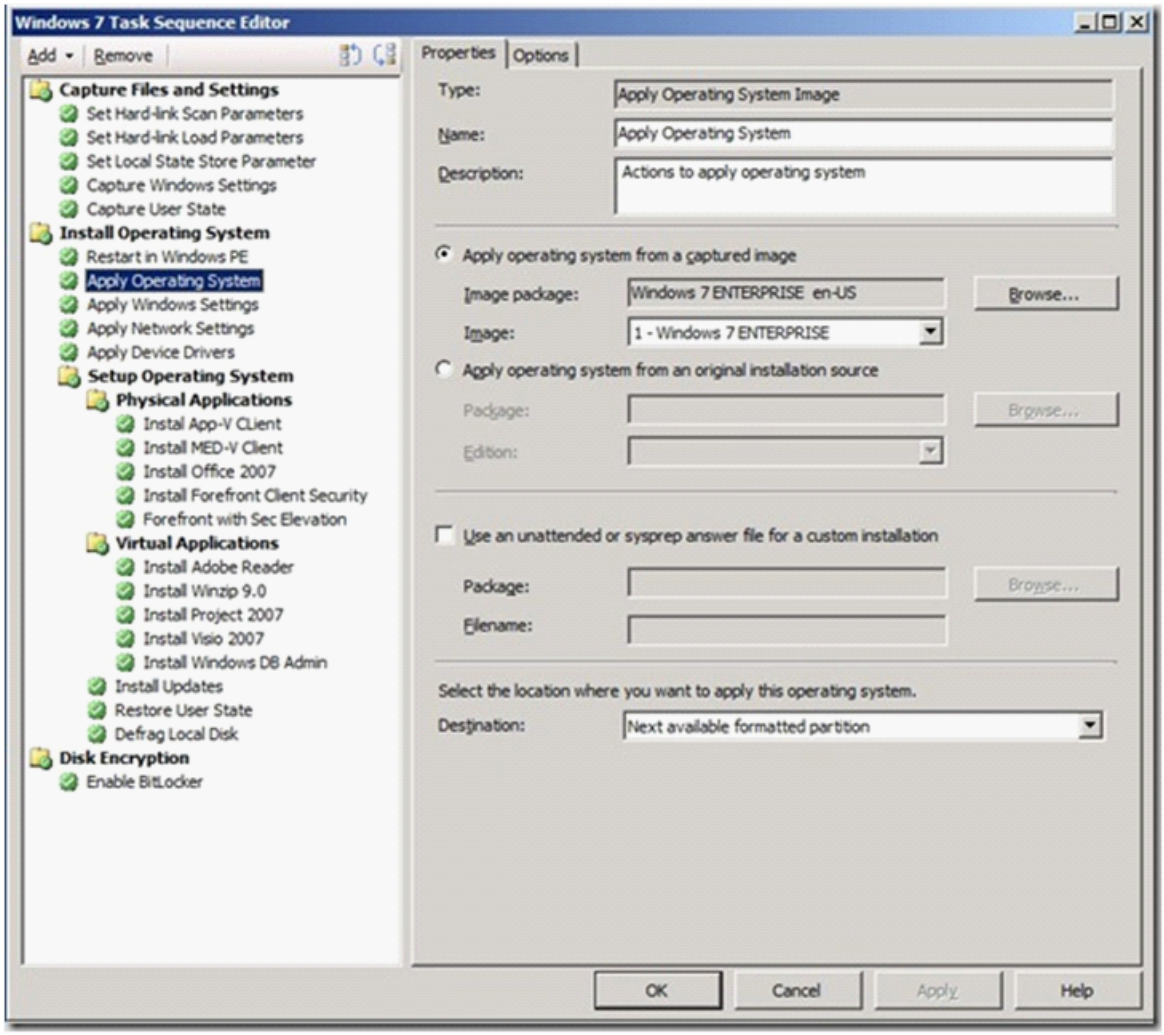


Figure 4 Task Sequence Editor

may be out in the field. Additionally, the IT staff has been told that it is essential to minimize user work disruptions.

Working together with System Center Configuration Manager SP2 and other key deployment tools and technologies such as Windows® User State Migration Tool (USMT) 4.0, Pre-Boot Execution Environment (PXE)-enabled network infrastructure, and Windows® Preinstallation Environment (Windows PE or WinPE), Intel vPro technology can help the IT staff deploy Windows 7 through its ability to use in-band and out-of-band connections to client PCs.

Consider the following deployment scenarios that are enabled by Intel vPro technology:

- In-band deployment with remote power on
- Out-of-band deployment with PXE startup
- Out-of-band deployment IDE-R startup

In each scenario, the IT administrator can power off computers after deployment; in fact, energy costs can be reduced by 50 percent by powering off Intel vPro-enabled PCs during off hours.[14] Each of these deployment scenarios also leads to reduced user downtime.

In-Band Deployment with Remote Power On

In this scenario, the IT staff can use System Center Configuration Manager 2007 SP2 to schedule an advertisement to initiate Windows 7 deployment and data migration. Data is migrated by taking advantage of the hard-link feature that lets the administrator define which data is to be migrated, protecting the data on the disk and making it unnecessary to copy the data to a remote share. Microsoft® Deployment Toolkit 2010 Beta 2 extensions for Configuration Manager 2007 SP2 enable hard-link migration without additional customization. Alternately, the administrator can call the User State Migration Tool (USMT) in a custom task to use the hard-link commands.

Success Brief: Tube Lines

Tube Lines has a 30-year Public Private Partnership (PPP) contract with London Underground. It is responsible for the maintenance and upgrade of the infrastructure on the Jubilee, Northern, and Piccadilly lines, which together carry almost two million passengers a day, 40 percent of those using the entire tube network.[15]

Complete IT transformation.
Tube Lines wanted a total infrastructure refresh to deliver greater efficiency and improve the user experience.

Hardware refresh.
Deployed 1,600 HP DC7900* desktop PCs powered by the Intel® Core™2 processor with vPro™ technology and 300 HP EliteBook 6930p* notebook PCs powered by Intel® Centrino® with vPro™ technology.

Deployed the latest generation of Microsoft enterprise technology, including System Center Configuration Manager 2007.

Greater energy efficiency.
By applying remote power management, Tube Lines expects to reduce CO2 emissions by 32,371kg per year supporting corporate green initiatives and translating into direct cost savings of GBP 29,425 (EUR 32,720) per year.

Remote power management.
By using the remote power on capabilities of Intel vPro technology, Tube Lines could achieve 90 percent overnight saturation during a scheduled off-hours patch deployment, a significant improvement over what was achieved previously, helping to protect against vulnerabilities and further improving IT security and software compliance.

The IT administrator can create a secure AMT power-on command to remotely power on and boot each computer that is associated with the advertisement. The administrator can then wake the computers running the Windows XP operating system wirelessly and initiate the deployment to Windows 7.

The Intel vPro support ensures that each computer is powered on so the in-band operating system upgrade can take place. Each computer can then pull the Windows 7 deployment image from the network and begin migration of the user state.

When the Windows 7 deployment is finished, the client systems can report the results of the migration to the management console. The IT staff can then use the out-of-band management console to troubleshoot and remediate any PCs on which the migration failed. Finally, the PCs can be remotely turned off to conserve energy and save costs.

Out-of-Band Deployment with PXE Startup
Alternately, the IT staff can define a PXE-enabled advertisement to initiate the Windows 7 deployment. The IT staff can then use the management console to initiate a PXE redirection, which begins the PXE startup. A Windows PE image is used to boot the PC, initiating deployment and migration of the user state.

When the Windows 7 deployment is finished, the client systems report the results of the migration to the management console. The IT staff can then use the out-of-band management console to troubleshoot and remediate any PCs on which the migration failed. Finally, the PCs can be remotely powered off to conserve energy and save costs.

Out-of-Band Deployment with IDE-R Startup
A final deployment alternative is enabled by the Intel vPro technology IDE redirection capabilities. With IDE-R, IT administrators can configure the client computers to start a network location that hosts remote media. The IT staff can define an advertisement to initiate the Windows 7 deployment, and then the IT staff can use the Intel vPro technology management console in Microsoft System Center Configuration Manager 2007 SP2 to initiate an IDE redirection, which begins a remote media startup.

The PCs can then start from the remote media with the Windows PE deployment image, which begins the Windows 7 deployment and the user state migration. Results are reported to the management console, and the IT staff can use the out-of-band management console to troubleshoot and remediate any PCs on which the migration failed. The PCs can then be remotely powered off to conserve energy and save costs.

Support Legacy Applications after Operating System Migration

IT staff may find that they have to support legacy applications after migrating to a new operating system. Older applications may not work correctly in the new operating system, and the IT staff wants to make sure users can still rely on these applications as needed.

> Intel VT support for Windows XP mode can provide a container for legacy applications after a migration to Windows 7.

System Center Configuration Manager 2007 SP2 can provide a solution.

The system administrator can use Intel® Virtualization Technology (VT) support for the Windows XP mode as a container for any any legacy applications. If VT is turned off in the BIOS, the administrator can easily turn it on with the System Center Configuration Manager 2007 SP2 out-of-band console.

Investigate a Security Event

IT professionals are also typically responsible for investigating and resolving unexpected or unexplained events.

Within System Center Configuration Manager 2007 SP2, Microsoft has included support for AMT audit logs.

> The out-of-band management console in System Center Configuration Manager enables viewing of audit logs.

Suppose one of the PCs in a company's fleet is acting suspiciously, and the IT administrator is concerned that there has been a security breach. The IT administrator can enable the AMT audit log feature (a post-provisioning task), and then open the out-of-band management console in System Center Configuration Manager 2007 SP2 and see who authorized the events. The administrator can select which AMT audit logs to turn on and view, and then the administrator can browse the audit logs and export information through an interface in the out-of-band management console. Management features that can be audited include network administration, security, endpoint access control, and agent presence.

AXA SİGORTA

sigortacılık / yeniden tanımlanıyor

Success Brief: AXA Sigorta

A leader in the Turkish insurance sector, AXA Sigorta supplies customers with insurance product packages based on their needs through their widespread distribution network.[16]

IT refresh.
The company installed Microsoft System Center Configuration Manager 2007 and the Microsoft Desktop Optimization Pack (Microsoft® SoftGrid® Application Virtualization and Microsoft® Diagnostics and Recovery Toolset).

Legacy software.
AXA Sigorta plans to migrate to the 2007 Microsoft® Office system, but some users prefer the 2003 Microsoft® Office System. With Microsoft SoftGrid Application Virtualization, users can use both application suites on one computer. This approach can provide an "adaption period" for users and can be used to avoid issues of incompatibility between applications.

Remote management.
The company plans to deploy a new operating system with System Center Configuration Manager 2007 and take advantage of the out-of-band management.

Energy savings.
AXA Sigorta used to require that all computers be left powered on during the night for updating. Because of the Intel vPro technology, AXA Sigorta can now remotely power on computers for updates and then power off the computers.

Security.
PCs undergo a security check before connecting to the network; if out of compliance, the PC is taken into quarantine and System Center Configuration Manager 2007 applies security updates.

Summary

The combination of Microsoft System Center Configuration Manager 2007 SP2 and Intel vPro technology can provide an IT organization with greater control of notebook and desktop client computers, even if the computers are powered off or if their operating systems are unresponsive. IT administrators can now gain a more seamless integration with their IT infrastructure when they deploy PCs with Intel vPro technology and manage the PCs with System Center Configuration Manager with SP2.

New capabilities can help speed up system updates and patching for both wired and wireless computers; improve the efficiency of an IT organization; and enhance remote diagnostic and troubleshooting capabilities, thus reducing the number of desk-side visits needed to resolve issues.

Configuration Manager 2007 SP2 can deploy virtual applications in the same way it delivers physical formats; applications can be streamed to desktops or delivered locally, so even mobile users can use virtual applications. These benefits combine to provide a more secure infrastructure, improved user uptime, and an improved bottom line, enabling an organization to spend smart, do more, and be more secure.

Related Links

For further information, see the following resources:

- Introducing Microsoft System Center Configuration Manager 2007:
  http://www.microsoft.com/systemcenter/configurationmanager/en/us/default.aspx
- For more information about Intel vPro technology and to interact with Intel vPro technology experts, visit the vPro Expert Center:
  http://communities.intel.com/community/vproexpert
- Intel vPro technology home page:
  http://www.intel.com/technology/vpro/index.htm
- System integrators talk about System Center 2007 with Intel vPro technology:
  http://communities.intel.com/openport/community/openportit/vproexpert/microsoft-vpro/blog/2008/05/16/system-integrators-talk-about-system-center-2007-with-intel-vpro-technology
- For those with Microsoft System Center Configuration Manager, SP2 can be downloaded from:
  http://connect.microsoft.com

Footnotes

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http://cache-www.intel.com/cd/00/00/33/54/335457_335457.pdf

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[12] Leyden, John, "Hackers and Viruses to Cost Businesses 1.6tn," vnunet.com, July 11, 2000

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http://download.intel.com/products/vpro/whitepaper/crossclient.pdf

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[15] Tube Lines case study
http://www.intel.com/references/pdfs/Tube_Lines_Case_Study.pdf

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