



Creating a Dynamic Virtual Client Infrastructure

SOLUTION BRIEF

Intel® vPro™ Technology

Microsoft Virtualization
Technologies

Business Challenge: Control costs while managing the increasing demands for computing services and service levels—or in other words, do more with less.

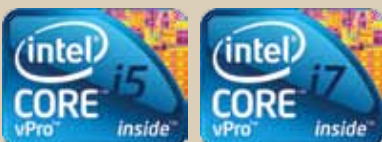
Technology Solution: Intel® vPro™ technology and Microsoft* virtualization technologies.

Implement a Dynamic Virtual Client infrastructure with Intel® vPro™ technology and Microsoft virtualization technologies.

Today's demanding economic environment presents IT managers with new challenges for desktop optimization. As a result, IT organizations are often expected to do more with less while maintaining, and in many cases improving, the level of performance and flexibility their companies require to remain agile and competitive.

The increasing service challenges IT organizations can face today include:

- The costs associated with IT desk-side repair visits and maintenance calls, especially for large organizations
- A growing number of mobile users who expect immediate and reliable offsite access to services and applications
- Increasing risk of data loss or theft because of an increasing number of mobile users
- An increasing number of business-critical applications that demand greater processing power
- Computer security threats that can affect desktop and laptop performance and the security of confidential data



Microsoft®



You can have the best of both worlds—the proven advantages of local performance, security, and mobility combined with centralized management and control of users' PCs.

- **Intel® vPro™ technology for remote PC management**
 - Enables remote control and power management through native support built into Microsoft System Center Configuration Manager 2007*.
- **Microsoft client virtualization for centralized application and operating system delivery**
 - *Microsoft Enterprise Desktop Virtualization (MED-V)** helps deploy and manage virtual Windows* operating systems in enterprise scenarios.
 - *Microsoft Application Virtualization (App-V)** virtualizes applications for delivery to the client PC in a sandboxed environment for compatibility and isolation.

To meet these challenges, IT organizations must assess and develop new and better computing strategies that focus on the varying needs of their companies' business segments. Companies must recognize that the hardware and software investment decisions made today play a direct role in a company's efficiency, profitability, and survival in the future. This is where Dynamic Virtual Client (DVC) computing comes in.

The Dynamic Virtual Client Vision

The Intel vision of DVC computing entails a powerful combination of client-side virtualization and centralized manageability, security, and software delivery. Desktop and laptop PCs that are powered by the all new 2010 Intel® Core™ vPro™ processors, and that use Microsoft client-side virtualization technologies, provide a DVC platform that enables both centralized management and local execution of user desktops. This best-of-both-worlds approach to desktop management promotes better application performance and ensures infrastructure readiness for Windows 7*.

Intel vPro Technology: The Ideal Platform for a DVC Infrastructure

The enhanced performance, security, and management benefits of Intel vPro technology make it a key component of a DVC computing infrastructure. PCs powered by the all new 2010 Intel Core i5 and Core i7 vPro processors can take advantage of intelligent performance and unique hardware-assisted security and manageability features to give you a more optimized desktop environment while providing greater IT control and cost savings.

Intel vPro technology enables IT organizations to extend the reach and functionality of the management console and provide advanced support for Microsoft client virtualization options and the desktop infrastructure. In addition, IT organizations that invest now in Intel vPro technology can ensure a DVC-capable infrastructure that is prepared for a centrally managed, virtualization-ready, and secure rollout of Windows 7.

Take Advantage of Windows XP Mode in Windows 7

PCs powered by Intel Core i5 and Core i7 vPro processors feature Intel® Virtualization Technology (VT), which supports Windows XP* Mode.

Windows XP Mode is a powerful productivity tool that is enhanced on hardware-assisted virtualization, such as Intel VT. It enables users to run legacy business applications directly from their Windows 7 Start menus. The applications run transparently inside a virtual machine that runs Windows XP—bringing the flexibility of virtualization to end user desktops.

Intelligent Performance

Enhancements in Intel Core i5 and Core i7 vPro processors ensure stellar performance for both physical and virtual desktops. Performance-enhancing innovations include:

- Intel® Turbo Boost Technology maximizes speed for demanding applications, dynamically accelerating performance to match your workload.
- Intel® Hyper-Threading Technology enables highly threaded applications to get more work done in parallel. With eight threads available to the operating system, users can run multiple demanding applications more efficiently, improving productivity.

In addition, Microsoft and Intel collaborated during the development of Windows 7 to help optimize Windows 7 performance on Intel processors. If your desktop infrastructure plans include Windows 7 and virtualization, PCs equipped with Intel Core vPro processors are the best choice.

Enhanced Manageability

When companies invest in hardware equipped with Intel vPro technology, IT organizations can reduce infrastructure complexity and total cost of ownership (TCO) through streamlined IT management and remote PC support.

- **Enhanced PC repair capabilities through remote, in-band, out-of-band, and secure management options:** IT staff can remotely boot the PC to a clean state or view the remote PC's screen, and can even use full keyboard, video, and mouse (KVM) control through all boot stages.¹ These capabilities reduce user downtime and costly desk-side visits for most operating system, boot, and software problems.
- **Improved configuration capabilities that maintain consistent system and product performance:** IT technicians can remotely reset the power and gain remote access to critical memory and BIOS settings.
- **Persistent event logs that store event information on dedicated memory, not the hard drive:** IT managers can access and review legacy event data for hardware or software problems or repair, even if the hard drive or operating system is unavailable.
- **Better monitoring of computer asset inventory:** Asset information is recorded in dedicated memory, allowing IT staff to access a computer at any time to verify software and hardware information and address missing or problem components.

Improved Security

The hardware-assisted security and manageability capabilities of Intel vPro technology enhance an IT organization's ability to maintain and protect business PCs and the sensitive data they contain.

- **Better and faster patch saturation:** IT managers can remotely discover and power up computers, ensuring better patch saturation across the network and enabling more protection while reducing user downtime.

¹ Requires Intel AMT 6.0 and a processor with Intel integrated graphics. Not available on all Intel Core vPro processors.

Business Scenario: Nationwide Accounting Firm

Profile: Accounting firm with 600+ employees

Requirements:

- Remote management
- Security
- Asset inventory
- Application compatibility with a new Windows 7 deployment

Solution:

- Intel vPro technology
- Microsoft MED-V

Because MED-V can encapsulate the operating system and applications in virtual machines, the accountants can run the virtualized systems on their desktop computers alongside native applications, enabling the business to run legacy applications that are incompatible with the new Windows 7 operating system. The remote manageability of Intel vPro technology could enable improved IT service and maintenance, better asset management, and, most importantly, enhanced control of system security for the PCs and sensitive client data.

- **Increased security compliance:** IT managers can power up PCs outside of an employee's regular working hours for maintenance or security tasks, limiting the amount of time that a user must release the computer for these critical updates.
- **Data protection:** Intel® Anti-Theft (AT) Technology is hardware-based technology that allows a laptop to be disabled in the event of its loss or theft, ensuring that critical customer or business information is secure.
- **Stronger security with Windows 7:** The complementary security technologies in Windows* 7 Enterprise and the all new 2010 Intel Core vPro processor family help enhance data protection and compliance, building the foundation for an optimized desktop environment.

Microsoft Client Virtualization Technologies

A DVC infrastructure that combines the robust hardware capabilities of Intel vPro technology with the comprehensive management and control features of Microsoft virtualization technologies helps enable an optimized desktop infrastructure. For example, MED-V and App-V, two of the virtualization technologies included in the Microsoft Desktop Optimization Pack (MDOP), use the capabilities of the Intel vPro technology to help improve IT efficiency, enhance user mobility and productivity, consolidate data center infrastructure, and reduce costs.

Microsoft Enterprise Desktop Virtualization

MED-V helps solve migration challenges and delays because of incompatible applications by allowing enterprises to centrally prepare and manage virtual machines (VMs)—which contain an operating system, applications, and associated support tools—for execution on client computers. Applications, including legacy applications, run inside the VMs, avoiding conflict with the host operating system and applications running on the host.

MED-V works with Microsoft Virtual PC, a type 2 or “hosted” hypervisor that runs on Windows operating systems. Virtual PC takes advantage of the processing power of the local computer, and is further enhanced by Intel VT, which offloads overhead from Virtual PC to the processor, providing improved virtual machine performance.

MED-V enables your IT organization to:

- **Accelerate the upgrade path to a new PC operating system** by running legacy applications in a virtual machine. Applications that cannot run or have not been tested to run in the new operating system can run in a VM on the desktop.
- **Improve business continuity** with the ability to quickly restore corporate desktops as new VMs.
- **Increase employee productivity through client-side virtualization** by making virtual applications appear as native applications and by making the VMs “invisible” to users.
- **Reduce cost of IT image management** by deploying virtual images that are independent of local hardware configuration.

Microsoft Application Virtualization

Microsoft App-V helps IT organizations to avoid application incompatibility problems by virtualizing applications for delivery to the user’s PC in a sandboxed environment so that native applications or even other virtual applications are isolated from one another.

IT managers can sequence normal applications into virtualized applications; these are then delivered through the App-V Sequencer as .msi files to the users’ PCs through the Microsoft System Center Application Virtualization Streaming Server, which streams virtualized applications in real time, or through conventional deployment options (such as USB, CD, or DVD deployment).

Business Scenario: Marketing Agency

Profile: Marketing agency with 400+ employees

Requirements:

- Rich applications
- Multiple versions of applications
- Offline use for remote users

Solution:

- Intel vPro technology
- Microsoft App-V
- Configuration Manager 2007

By converting applications into virtual services that can be run on demand by the agency’s graphics and editing departments, the IT staff can manage and host these applications centrally, improving employee access and productivity and reducing complexity in deployment, management, and updates. The marketing agency’s IT staff can also use App-V to stream the legacy versions of estimating software for use by the agency’s media department. App-V facilitates business continuity by enabling employees to access the virtualized applications from their home computers.

The remote management capabilities of Intel vPro technology and the streaming capabilities of App-V provide ideal hardware and software options to meet the marketing agency’s computing needs.



Resources

<http://communities.intel.com/docs/DOC-1494.pdf>

Virtualized applications are cached on the user's PC, providing the user with a rich and robust experience even when offline. Application compatibility issues are resolved because the virtualized application is isolated from other applications that are installed on the native desktop. This isolation from other software avoids application incompatibility issues.

With Microsoft App-V, IT organizations can:

- **Perform maintenance, security, and configuration tasks** from the App-V centralized server location. This approach ensures that streamed applications contain the latest features and security patches.
- **Complete security refreshes and operating system and application migrations** in a more automated and less time-consuming fashion, without interrupting the user. The enhanced manageability of virtualized applications in App-V ensures increased IT efficiency, improved cost control, and business continuity.
- **Improve disaster recovery.** Because App-V houses applications on a centralized server, IT organizations can quickly restore applications after a disaster.
- **Give users easy access to rich and varied applications** without the risk of application incompatibilities. The streaming capability of App-V ensures that users receive fast, on-demand access to applications, while also providing the benefits of application cache so that key productivity applications are available, whether users are online or offline.
- **Improve access to applications from various computers and locations,** providing the increased mobility, scalability, and flexibility users need to better meet business objectives. App-V also integrates virtualized applications natively on the client desktop. This format gives users a familiar PC interface that leads to a better user experience.

Summary

The Intel vision of Dynamic Virtual Client (DVC) computing combines client-side virtualization with centralized application and operating system delivery and local execution. Desktop and laptop PCs that use 2010 Intel Core vPro processors in concert with Microsoft virtualization technologies, such as Windows XP Mode, MED-V, and App-V, enable a DVC solution that delivers centralized management and local execution and extends the performance and flexibility of client-side virtualization. With these capabilities, IT organizations can streamline their processes, improve client services, enhance the security and performance of client PCs, and reduce costs.

The DVC approach to application delivery and hardware management promotes better performance and more efficient migration of applications to new operating systems, providing end users with the power and mobility they value, while ensuring that IT retains the security and control of centralized management.

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Intel® Virtualization Technology requires a computer system with an enabled Intel® processor, BIOS, virtual machine monitor (VMM) and, for some uses, certain platform software enabled for it. Functionality, performance or other benefits will vary depending on hardware and software configurations and may require a BIOS update. Software applications may not be compatible with all operating systems. Please check with your application vendor.

Intel® VT-x supports both 32-bit and 64-bit Intel® Xeon® processor-based solutions (Intel® 64 and IA-32).

Intel® VT-x is included in Intel® Xeon® processors.

Intel® Active Management Technology requires the platform to have an Intel® AMT-enabled chipset, network hardware and software. The platform must also be connected to a power source and an active LAN port.


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