OS Streaming With Intel vPro

Whitepaper

SUBJECT:

HOW TO COMPLETELY REDUCE DESKTOP MANAGEMENT COST

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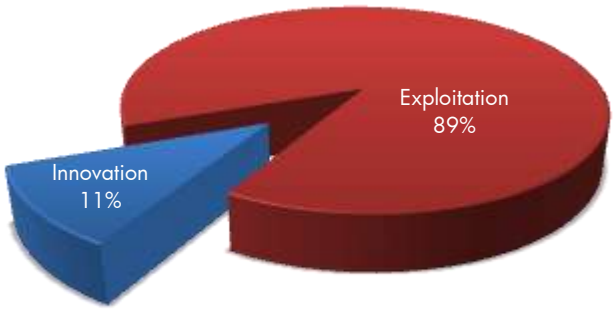
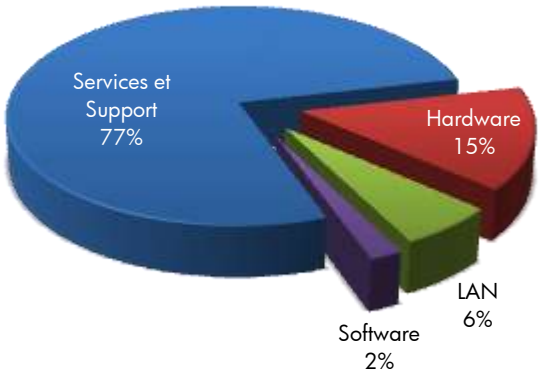
Contents

Desktop Challenges

Business pressures	IT constraints
▪ Adapt to a changing workforce ▪ Increase employee productivity and IT ROI ▪ Roll out new products & services more quickly ▪ Maintain business continuity ▪ Minimize cost and risk	▪ Spending on management & maintenance ▪ Power and cooling ▪ Facilities ▪ Personnel ▪ Legacy infrastructure

Here is the representation of Desktop TCO detailed by Gartner





PC Dependency is everywhere

Challenges of Traditional PCs & Laptops

1. Security concerns
2. Difficult to Manage
3. Reliability Concerns
4. High Power consumption
5. High Total Cost of Ownership
6. Does not scale well in growing environments

Why Disk Provisioning for Desktops ?

Why OS Streaming for users

1. Integrate technology into daily activities more efficiently while maintaining a full PC experience
2. Eliminate the need for you to be a ”Computer expert”
3. Put control of the environment in your hands
4. Minimize computer-related down time
5. Maximize user time on task

Why OS Streaming for IT Staff

1. Easy deployment & replacement
2. Easy support & manageability
3. High reliability
4. Silent and highly energy efficient
5. Secure, immune to modification attempts
6. Lower total cost of ownership

How does OS Streaming Works ?

Consider a traditional desktop infrastructure.

On Each desktop you'll find a Hard Drive with an Operating System, applications and data

*Well, within OS Streaming, Hard Drive with Operating System, applications and data is located on a **SINGLE** image stored on a local server*

And when computer boot up, they will automatically boot on Ethereal Card and request a connection to the Server thanks to the DHCP and BOOTP Server (this can be a single server or separated servers)

After booting up with Ethereal Card, the server will stream the SINGLE image on all the Desktop.

*As this is a streaming solution, the complete image **WILL NOT** be downloaded on the network but the minimum information needed by the desktops to launch the operating system with applications and data.*

When the desktops complete the boot up process the User will have the same environment, performance and devices as before, without any way to know if it was streamed or not …

3 different modes of using OS Streaming

The OS Streaming solution can be used with 3 different Modes:

Volatile Mode:

If the Desktops make any changes on the SINGLE image, after rebooting the changes will be lost and the Desktop will reboot on the native SINGLE image.

This is the most important thing about OS Streaming solutions, because any miss configuration or malware, virus, application issues will not be saved after rebooting the Desktops.

Volatile mode enables clients to use exactly the same volume configuration after every reboot. Anything written to the volume by the client will be lost when rebooted. One of the advantages of this mode is that clients boot up from the server very quickly.

You can use Windows User Profiles (desktop, shortcuts, favorites, bookmarks, application settings, etc.)

So you'll be absolutely sure, when you boot up your Desktop, that you'll always have the native and secure SINGLE image without any changes.

Persistent Mode:

When each Desktop will boot up on OS Streaming, an overlay will be created on the server for each computer booting.

Persistent mode is similar to Volatile mode except it enables you to retain some customization of the volume for each client, separate from the hard disk image.

Administrator Mode

Administrator mode is usually reserved for administrators so that they can deploy applications and make system changes to the configuration. All modifications are performed and saved on the actual hard disk image.

This mode can also be used for all stations at the same time if each station has its own private volume on the server, making it a very private mode.

Why Intel vPro technology?

Intel vPro technology is a solution that can provide significant improvements on IT management for Desktops.

Intel vPro solution is based on OOB (Out of Band) management communication.

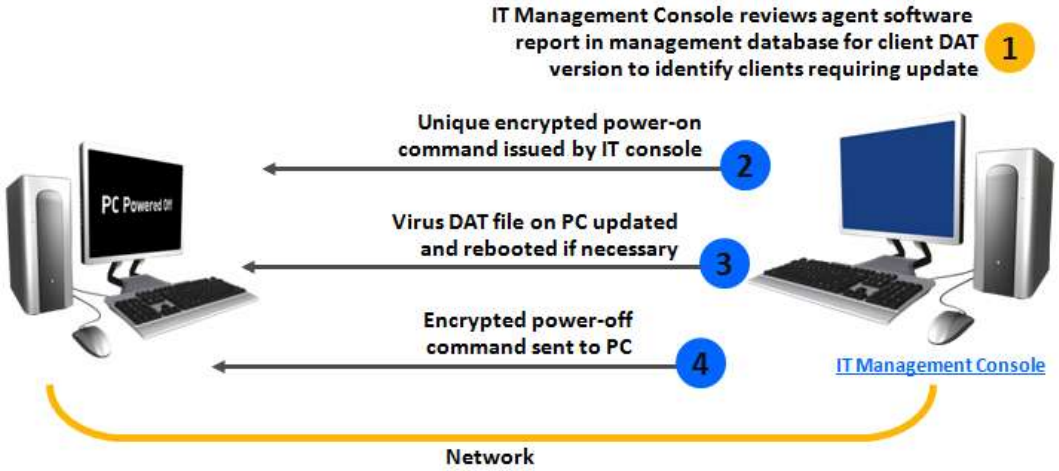
That means the Desktop can be managed when they are Active, ***even when System is turned off*** *or* ***Operating System is down****.*

We'll focus on some very interesting feature of vPro witch are:

1. Secure Remote Power-On
2. Secure Remote Asset Inventory
3. Secure Remote Diagnostics and Repair
4. Intel Virtualization Technology

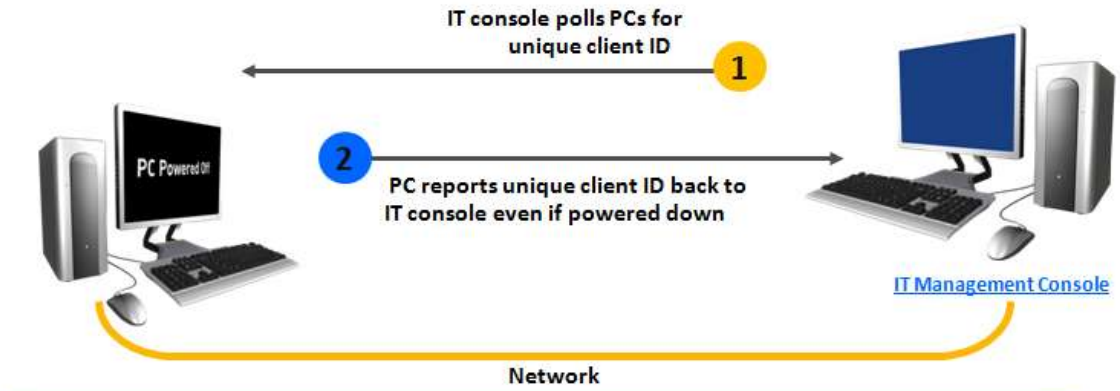
Why Intel vPro technology?

Secure Remote Power



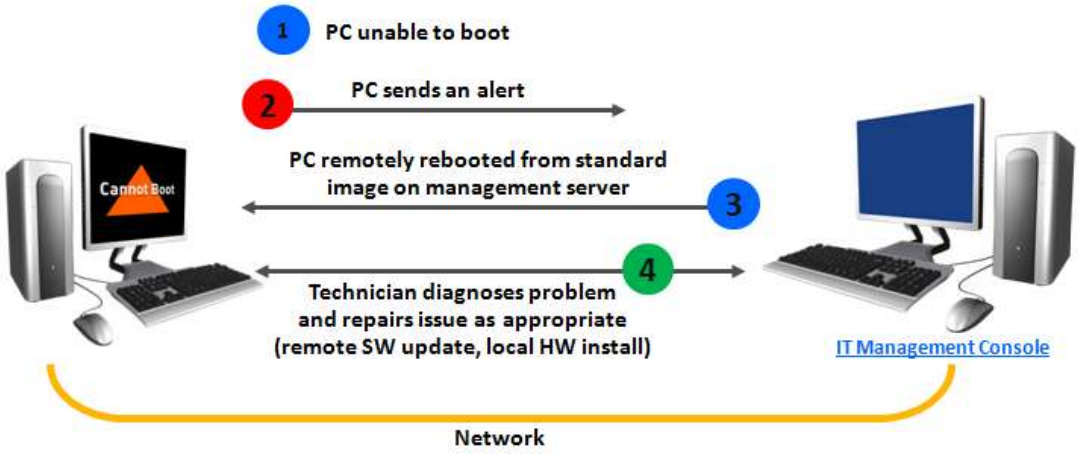
- Secure, remote deployment of patches without user interruption
- Reduce time required to deploy patches, reduces vulnerability

Secure Remote Inventory



- Faster, more accurate than manual audits
- Assist compliance with government regulations

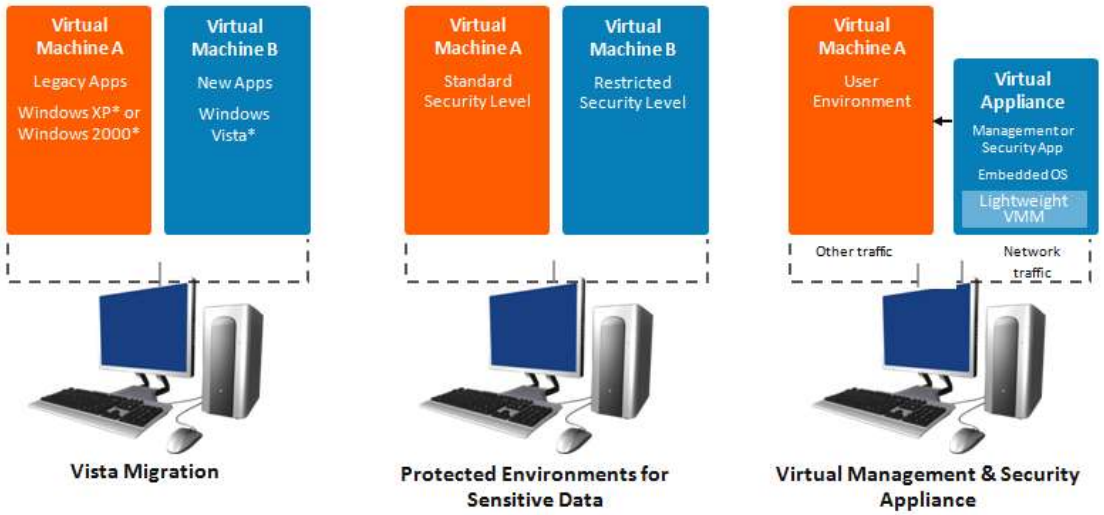
Secured Remote Diagnostics



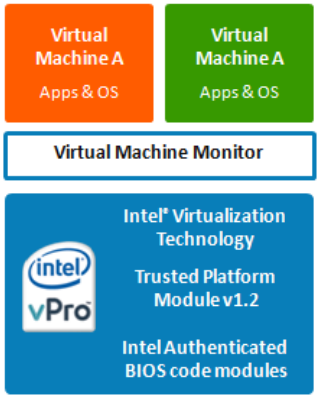
- Reduce the number of deskside visits
- Rapid response gets users up and running quickly

Intel Virtualization

"Deploy x86 servers and PCs with hardware virtualization support early, to maximize the potential benefit across your installed base once appropriate software is available."[1] - Gartner



Innovative Services and Initiatives
Intel® Trusted Execution Technology (Intel® TXT) with Intel® Virtualization Technology (Intel® VT)



1. Hardware-based root of trust enables launch of Virtual Machine Monitor into a known, expected state. Changes to VMM can be detected via hash-based measurements
2. Intel® VT and Intel® VT for Directed I/O restrict unauthorized software and hardware memory access across virtual machines, enforcing strong isolation
3. Hardware-enforced removal of residual data at virtual machine shutdown, protecting data from memory snooping software

Why OS Streaming with Intel vPro technology?

I dedicated this article to OS Streaming and vPro solution because both technologies make perfect sense together and I'll explain why.

➔ *Let's take a very simple example by deploying XP SP3 on 50 Desktops*

First, if you don't use OS Streaming solution that would take around 40 minutes for each computer so that will impact close to a working day for the IT department.

Even if you pay for a management software solution like Microsoft WSUS, that SP3 will be deploy on each desktop impacting the users connected ; or you'll need the upgrade to be planed the night. And that process will not be 100% sure of been well deploy on all the desktops and without any errors in the future.

But if you use OS Streaming solution, that SP3 deployment will take a maximum of 40 minutes for all the desktops because that's the time needed to deploy it on a SINGLE image. Next, you'll just have to reboot all computers so that they will boot on the new SP3 SINGLE image.

After that, if you don't use OS Streaming and you notice the SP3 deployment has an incompatibility with a third party application then you'll have to redeploy your original image on the entire desktops. And if you didn't paid for Image Management software like Norton Ghost, that would take a while to reinstall all desktops!)

But even if you have a ghost license, you'll lose again a minimum of 2 hours …

In that particular case, with OS Streaming you'll just have to modify the server configuration file (around 30 second needed) and just reboot the desktops so that they can use the previous SINGLE image.

When using OS Streaming without any vPro manageability you'll first loose less time on Break Fix while you'll just need to reboot the Desktop or plugged a new Desktop.

Well, with Intel vPro solution you'll be able to automatically and securely reboot all the desktops remotely.

*So that particular process would be **100% done remotely** without any need to call for an IT to go onsite …*

*Also, with the Secure Remote inventory of Intel vPro, we'll have the ability to **retrieve MAC address event when the Desktop is OFF**. And that feature could be very interesting in case you need to specify any server image for specific desktop using OS Streaming. And once again you'll not need to go on site to retrieve assets inventory…*

Another interesting feature of Intel vPro is ***the remote diagnostic****.*

Let's take a second example with OS Streaming solution.

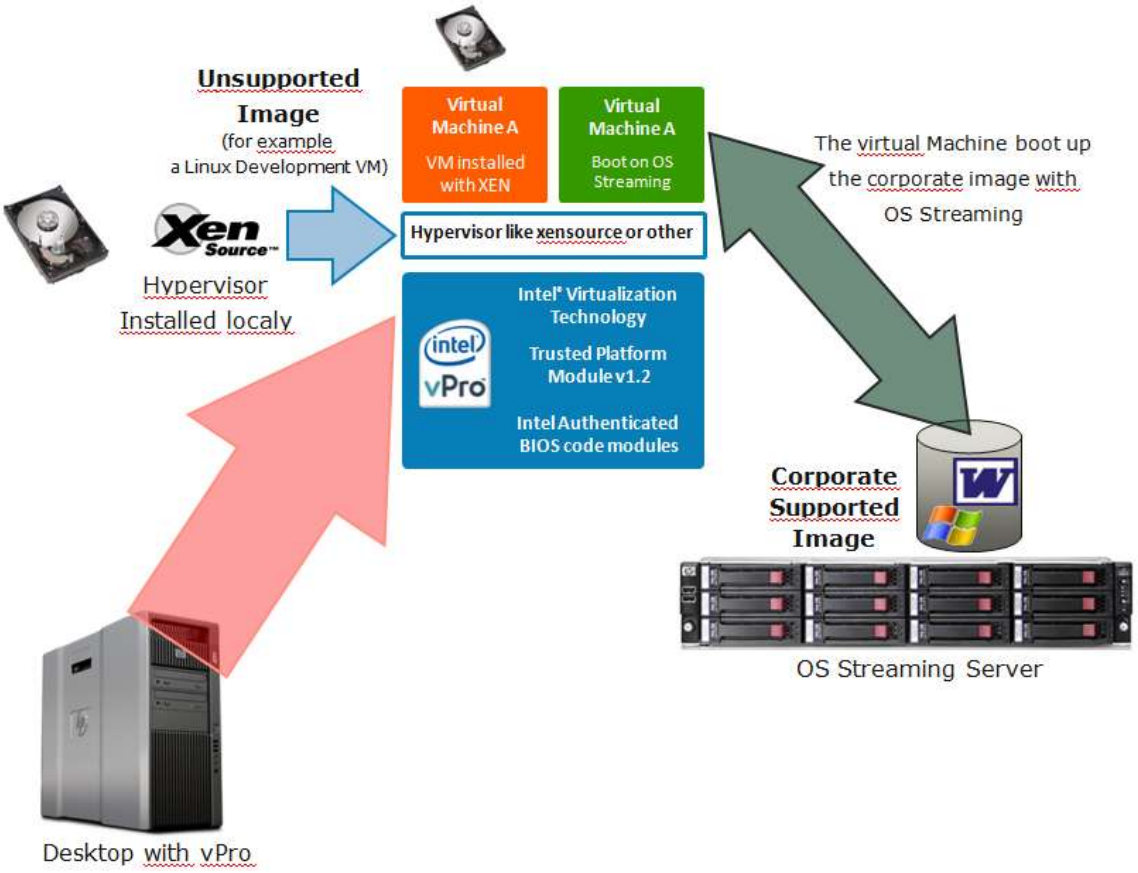
As the solution is based on a Network boot process, IF a user had plugged a USB Key and then reboots the Desktop, by default, the desktop will try to boot on USB and then it will not boot on OS Streaming. In that particular case, with Intel vPro you'll just have to remotely change desktop BIOS setting asking the computer to first boot on Ethereal and then remotely reboot the desktop.

Last Intel vPro feature interesting in addition with OS Streaming is the ***Virtualization technology*** *used on the processor.*

As describe in the previous chapter, the ***VT feature*** *provide the possibility to install a local hypervisor on the Hard Drive of the Desktop. With that setting you'll be able to run like two operating system in the same time on the computer.*

This could be a great opportunity to use both OS Streaming solution and local operating system on each Desktop. That use case could be very interesting to have a kind of ***rescue environment*** *in case there is an issue with the one install locally on the Desktop.*

This scheme may be easier to understand:



If my explanation is not so clear, you can watch that case explain by an intel engineer that had the same idea as me …

http://www.youtube.com/watch?v=TO5OX6EI12w

For more information on OS Streaming and Intel vPro

More information on OS Streaming:

Thanks Christian Black for this great video that explains very well OS Streaming:

http://news.zdnet.com/2422-13569_22-201712.html

OS Streaming whitepaper by Intel:

http://communities.intel.com/docs/DOC-2541

HP OS Streaming Solution named HP Image Manager:

http://h18004.www1.hp.com/products/quickspecs/12898_div/12898_div.HTML

http://www.scribd.com/doc/16952198/Virtual-is-at-Ion-HP-Image-Manager-v3

Citrix Provisioning Server (previously Ardence):

http://community.citrix.com/blogs/citrite/barryf/2007/12/12/OS+Streaming+Gone+Wild

Thanks Brian Madden:

http://www.brianmadden.com/blogs/brianmadden/archive/2007/09/13/vmware-ondemand-streaming-technology-will-challenge-citrix-s-ardence-platform.aspx

My website on OS Streaming …:

http://www.damienbruley.com/vDisk.html

Virt-Now web site :

http://www.virt-now.com

Intel vPro technical sheets:

http://www.intel.com/technology/vpro/index.htm

http://en.wikipedia.org/wiki/Intel_vPro