Balancing desktop virtualization with Citrix HDX MediaStream and Intel Core and Intel Core vPro processors

Abstract

Enterprise datacenters are increasingly interested in managed virtual desktop solutions. However, IT organizations face challenges in deploying efficient, centrally managed desktop environments while providing users the rich desktop experience that they are accustomed to today, particularly with regard to consuming and creating rich media content. Citrix® HDX™ MediaStream, through a process called “adaptive orchestration,” automatically senses intelligent clients and balances where rich media file types are processed. The result is a uniquely capable and truly optimized use of available computer resources that delivers high-density, centrally managed desktops and an uncompromising user experience when intelligent clients are present. With the combination of Citrix HDX and Intel®-powered intelligent clients and servers, this solution provides organizations with cost effective, highly efficient, optimized computing models for enterprise-scale desktop virtualization environments.

This document discusses the benefits of Citrix HDX MediaStream content delivery delivered from Intel® Xeon® processor-based servers to Intel® Core™ and Intel® Core™ vPro™ processor-based client endpoints, and cites specific performance benchmarks.

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Introduction

Managing information technology often requires tradeoffs. Full-featured PCs, also known as intelligent clients, are flexible and powerful enough for the most demanding organizational workloads, including multimedia creation and playback. Thin clients, on the other hand, can initially appear to be inexpensive, but require an increased investment in datacenter real estate, powerful servers, and network capacity to support them. However, even with this investment, thin clients still lack the capabilities required for demanding multimedia applications and mobility that are found in intelligent clients.

Modern enterprises are making more use of rich media, not less. Examples include real-time video conferencing, desktop video training, and live meeting conferences. All require greater processing power and mobility to deliver an uncompromised user experience.

Organizations deploying a virtual desktop strategy often face performance and capacity problems related to rich media. Decoding multimedia content for multiple virtual desktop users can create unforeseen spikes in demand, and puts an added and often unpredictable strain on datacenter resources, servers, and networks. This strain can potentially hinder overall performance of an enterprise’s virtual desktop environment, creating stress between users and IT. Performance can also suffer at the thin client endpoint, where video or audio playback might be compromised due to network congestion or underpowered endpoint processors.

Intel and Citrix bridge this gap through the combined use of Citrix HDX MediaStream and intelligent clients powered by Intel Core and Intel Core vPro processors. Citrix HDX MediaStream uniquely takes advantage of the power of intelligent clients to deliver uncompromising multimedia performance in a managed virtual desktop environment, including high-definition video playback and Adobe® Flash® animation. This combination also lowers TCO by increasing the density of virtual desktops on servers and lowering network traffic, which reduces the amount of hardware required to service users.

Citrix HDX MediaStream helps organizations overcome virtual desktop bottlenecks

Citrix HDX MediaStream accelerates rich media performance by redirecting multimedia content streams to intelligent clients for local playback.

Citrix HDX MediaStream uses the capabilities of both the endpoint and host server. Using Citrix HDX Adaptive Orchestration, the virtual desktop host server determines if an intelligent client has sufficient multimedia processing power, and if there is sufficient network bandwidth and low latency. If the endpoint and network meet specific performance criteria, the server can redirect the multimedia data to the intelligent client in its native, compressed format for best playback performance. This is in contrast to content delivery to clients with limited processing capabilities, where the multimedia content is rendered on the server and then sent to the client for display.

Delivering rich media content to thin clients can result in limited scalability since multimedia content must first be rendered on the server, consuming the
server’s processing resources. Many rich media formats are also well-suited to streaming, making delivery to an intelligent client for local decoding a more efficient use of resources. By sending the multimedia data to the intelligent client for rendering, the Citrix and Intel solution reduces demands on the server and network, allowing greater virtual desktop density and better utilization of server and network resources.

Features on the Intel Core microarchitecture, such as Intel® Turbo Boost Technology and Intel® Advanced Digital Media Boost, accelerate rich media performance, providing an uncompromised user experience.

**Citrix HDX MediaStream helps increase host server performance**

Citrix® Labs performed internal tests to determine the specific impact HDX MediaStream has on virtual desktop density.

**Test overview**

The testing consisted of a series of single-server scalability tests. The initial tests were run on Intel Xeon processor-based servers configured with Citrix® XenServer® 5.5 and Windows® XP SP3 virtual desktop agents (VDAs), with subsequent tests run with Windows® 7 VDAs.

The tests were built using LoginVSI Pro 2.0 by Login Consultants and included the execution of a series of Microsoft® Office 2007 applications while running multimedia applications (playing a WMV video file, playing an MP3 audio file, and running a series of Flash animations) within each virtual desktop session. LoginVSI measured the response times to produce a score that indicates how many desktops a given configuration can support.

Test results

The test determined that desktop density can increase by up to 24 percent for Windows XP desktops and 33 percent for Windows 7 desktops. Client-side CPU utilization increased by 20 percent, leading to better CPU utilization at the endpoint. The key to achieving these results was the transfer of processor and network load from the hosting XenServer to the client.

Related links

Citrix HDX MediaStream
http://hdx.citrix.com/hdx-mediastream

Choosing the best business client
http://www.intel.com/go/businesspc

Citrix and Intel Partnership
http://www.citrix.com/intel

Intel vPro Technology

Citrix XenClient
http://www.citrix.com/xenclient

Conclusion

With the increased use of rich media in organizations, Citrix HDX MediaStream, combined with servers running Intel Xeon processors and intelligent clients running Intel Core processors, offers an uncompromised user experience while giving IT the ability to manage more desktops with less datacenter stress, as well as server and network hardware. This helps lower TCO while increasing user productivity.
Endnotes

1 Decoding rich media on an intelligent client requires the codec for any supported multimedia stream to be present on both the host server and endpoint.


3 For more information on how the score is determined, please see the LoginVSI Pro 2.0 documentation, available at http://www.loginconsultants.com.