



Why VDI's Time Is Finally Here

After years of hype and heady predictions, the time is finally right for midsize organizations to take advantage of the many benefits afforded by Virtual Desktop Infrastructure, including greater security, reduced complexity, improved compliance and much greater business agility.



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Businesses of all sizes are turning to virtualization as an effective way to cut costs, consolidate space, reduce energy consumption and improve any number of business and IT initiatives, including business continuity, agility, security, compliance and disaster recovery. More than 80 percent of midsize and large businesses have implemented server virtualization at some level, according to various research reports, and businesses have saved millions of dollars worldwide by using virtualization as a tool to consolidate and optimize their IT environments.^{1,2}

As data centers are becoming even more highly virtualized, organizations are finding that Virtual Desktop Infrastructure (VDI) can provide a wide range of additional benefits, both for the IT department and for the business. For IT, VDI can increase control and security, reduce complexity, ease management and improve business continuity. For the business, VDI can improve agility, compliance management, flexibility, and responsiveness to customers, partners and employees. Over time, it can also lead to cost savings.

Yet, while IT and business executives have recognized the potential benefits of VDI for several years, it is only now that they are beginning to move forward and take the steps necessary to implement VDI solutions on a broader scale. According to an InformationWeek Analytics Desktop Virtualization Survey conducted in mid-2010, 77 percent of respondents said they are actively using, testing or assessing the benefits of VDI.³

¹ Server Virtualization Life Cycle Report, CDW LLC, January 11, 2010

² Gartner Says Virtualization to be Highest-Impact Issue Challenging Infrastructure and Operations Through 2015, September 27, 2010, Gartner

³ Research: VDI Adoption Trends: <http://www.informationweek.com/news/hardware/desktop/227500495>



Why VDI, Why Now?

To be sure, the potential benefits of VDI are great. Nearly three quarters of VDI users have reduced the time it takes to complete operating system and application upgrades; 68 percent are experiencing shorter time to resolution for help desk calls; and 50 percent are experiencing fewer office visits to fix PCs, according to a survey CDW conducted in the second half of 2010.⁴ Forrester Research reports that ongoing support costs can be reduced by as much as 60 percent and that users experienced a 40 percent drop in help desk calls after it committed to VDI.⁵

Those types of results beg the question: Why has it taken this long for VDI to take off? The answer, simply, is that the technology hasn't quite been ready for prime time – particularly for the many midsize businesses that rely on Microsoft® solutions for their critical applications, such as SQL Server® and SharePoint®. But that paradigm has shifted, and both the hardware and software for successful VDI deployments are ready and available.

On the software side, Microsoft has made a significant commitment to virtualization in general and to VDI in particular. With Microsoft's Hyper-V™ R2 hypervisor now included as part of Windows Server® 2008 R2, midsize businesses have a cost-efficient path to virtualization with a fully featured server virtualization platform, including important next-generation features such as live migration.

By using Microsoft solutions for VDI as well, organizations can benefit in any number of additional ways, including centralized management through Microsoft System Center's Virtual Machine Manager for both server and VDI deployments.

⁴CDW Client Virtualization Straw Poll, January 4, 2011

⁵The Ecosystem Guide to Virtual Desktop Infrastructure: Virtual Desktops, Tangible Benefits, September 2010, UBM TechWeb



In addition, by running Microsoft Application Virtualization (App-V) in conjunction with VDI, organizations can take advantage of simplified provisioning, deployment and integration across Microsoft applications. Finally, and perhaps most important, Microsoft has added significant technology advances in two areas that are critical to VDI:

- **Graphics virtualization and remoting**, with RemoteFX®
- **Dynamic Memory management**, with Dynamic Memory available in Windows Server 2008 R2 Service Pack 1

Why Graphics and Memory Management Are Critical

Graphics and memory management are critical because the user experience is critical. Until now, one of the biggest barriers to more widespread deployment of VDI has been managing the user experience. Research by Enterprise Strategy Group (ESG) in 2010 showed what many IT professionals know all too well: Users are resistant to change and that moving from a traditional desktop model to a virtual desktop “will no doubt make many uneasy.” ESG advised to set appropriate expectations and align deployment efforts and receive an extremely high initial acceptance rate from end users.⁶

Simply, if users felt performance, options and their overall experience at the client level would be degraded with VDI, they would resist by creating challenges and obstacles for IT to deploy VDI, especially on thin clients. As user demands have increased during recent years for more media-rich applications – corporate training videos and streaming video, for example – the challenges of delivering a rich desktop experience through VDI have increased as well. IT departments have been able to set up users with virtual desktops, but they often hear the same complaints: no rich graphics, no training videos, no YouTube.

⁶ Desktop Virtualization Market is a Wide Open Opportunity, February 2, 2010, Enterprise Strategy Group



RemoteFX: With RemoteFX, the challenge of ensuring a rich user experience on all endpoint devices – fully featured clients as well as thin clients – has been mitigated significantly. Traditionally in VDI, the desktop is run from a server, and there hasn't been a good way of sending rich graphics remotely from the server to the desktop. You can have rich graphics on the server, but you face the challenge of compressing and sending it to the desktop, and then at the desktop level, receiving, decompressing and running it in an acceptable fashion, with no pixel loss. Until the introduction of RemoteFX, there has been no way to do that successfully.

With RemoteFX, the server can now deliver rich graphics to the desktop. The Graphics Processing Unit (GPU) that sits in the server can be divided up among groups of users, and workers can experience their workspace in full fidelity with their applications and data centrally managed in the data center. Even bandwidth-intensive applications, such as 3-D streaming video and rich media, can be supported through the network in a virtual desktop environment.

Dynamic Memory Management: With Dynamic Memory for Hyper-V, IT can centrally manage client devices more efficiently by dynamically increasing and decreasing the memory available to each device. This improves overall infrastructure performance and enables increased virtual machine (VM) density as well. Dynamic Memory Management enables VDI by improving performance, availability and flexibility at the user level.

If, for example, one user has been allocated a certain amount of memory, IT can set parameters to dynamically allocate more memory to that user so it is available when needed. IT also creates a system by which the memory is allocated automatically, so when a user at one device is not online, the memory usually allocated to that device can be put to use somewhere else in the infrastructure.



Why Hardware Is Critical

With features such as RemoteFX and Dynamic Memory, IT organizations will feel more comfortable and confident that they can address some of the cultural issues that have caused difficulties in some VDI deployments. However, in order to take advantage of the rich graphics capabilities now available through Microsoft VDI deployments, it is equally critical to make sure that the hardware being deployed is maximized both for VDI deployments and for virtualized server deployments.

On the server side, you want to make sure your equipment has graphics cards that deliver the highest level of performance, taking advantage of the advances delivered by RemoteFX. An important feature, for example, is graphics density: How many users can be virtualized using the server's GPU? The more users that can be served, the more optimization and consolidation you can achieve from your server investment.

In this area, servers powered by the AMD Opteron™ 6000 Series platform with AMD FirePro™ professional graphics achieve outstanding performance. IT organizations can also maximize their consolidation efforts by using direct mapping with multiple AMD FirePro professional graphics cards to allow for a single server to create multiple VMs with full graphics performance and multiple remote connections.

In addition to graphics capabilities in VDI environments, server performance is extremely important. Servers with higher core density and more memory can handle a large number of desktop devices in a VDI environment and also deliver high performance to each device. AMD delivers the world's first 8-core and 12-core x86 server processors with the highest core density,⁷ allowing organizations to get outstanding VM density without denting the budget.

⁷Comparison of 12-core AMD Opteron 6100 Series processor with 6-core Intel Xeon 5600 series and 8-core Intel 7500 series processors



The AMD Opteron™ 6000 Series platform allows organizations to consolidate more VMs per platform when using the industry standard of one VM/core,⁸ and the performance advantages delivered by the AMD Opteron™ 6000 Series platform enable organizations to maximize the benefits delivered through Dynamic Memory. With four channels of DDR-3 memory per processor, servers powered by the AMD Opteron™ 6000 Series platform can deliver user sessions that are fast and responsive, easing concerns IT professionals may have about delivering a quality user experience in VDI environments.

AMD provides a complete platform for VDI, from highly dense CPUs supporting the server platform, to high-performing graphics cards for the server, to processors that enable well-designed thin clients optimized for VDI environments. By choosing AMD solutions across the VDI infrastructure, organizations can rely on one supplier with leading solutions, enabling leading performance for all parts of the VDI equation, including the GPU and the CPU. In addition, choosing a single vendor that has a same-socket infrastructure and a stable, long-term road map minimizes the cost of transitions and maximizes long-term investments in hardware, software and personnel throughout the organization, providing assurance and security.

Why Infrastructure Hardware Is Critical

In addition to the enhanced user experience, several other trends are taking place in the data center that are helping to drive the increased deployment of VDI, particularly in Microsoft environments.

⁸ Based on 2P AMD Opteron-based Dell PowerEdge R715 (24 cores) @ \$16,546 and 2P Intel-based Dell PowerEdge R710 (12 cores) @ \$16,451. Both include 32GB memory, 2 146GB hard drives, RAID 0, standard warranty. R715 includes VMware vSphere Enterprise Plus 4.1 2-CPU license, R710 price includes VMware vSphere Enterprise 4.1 2-CPU license. Utilizing 1 VM per core AMD = \$689/VM (\$16,546 / 24), Intel = \$1,370 (\$16,451 / 12)



One of these trends is a result of the overall growth of server virtualization throughout organizations. By the end of 2012, Gartner predicts that approximately 50 percent of server workloads will be running on VMs.⁹ With the growth of virtualization, businesses of all sizes are realizing that they need to invest in their storage and network infrastructures as well. With faster networks able to deliver more bandwidth, and with storage solutions that have faster I/O and greater capacity, IT organizations are discovering that they have a much more fertile ground in place for the rollout of VDI.

In addition, with server virtualization increasing, many organizations are taking advantage of the latest advances in server hardware that are being delivered by AMD, including increased core counts, increased memory and reduced power consumption. Another advantage AMD delivers is socket- and platform-commonality across product generations, which enhances scalability and reduces management complexity. In virtualization – whether server virtualization or VDI – it is important to choose a hardware platform that offers an end-to-end solution with leading performance for the full range of virtualization requirements, including server processor, GPU and client processor.

Another important development that is driving overall virtualization growth is the impact that Microsoft is having on server virtualization by offering Hyper-V as part of Windows Server 2008 R2. For many midsize businesses that rely on Microsoft for much of their infrastructure – operating systems, applications, databases and, now, virtualization – this makes it much simpler to consider VDI as a viable solution for the first time.

By sticking with Microsoft for VDI as well as server virtualization, midsize businesses experience much better ease of integration across all Microsoft solutions and can benefit from the knowledge, experience and training that have already

⁹ Gartner Says 16 Percent of Workloads are Running in Virtual Machines Today, October 21, 2009, Gartner



been invested in their IT personnel and end users. Another advantage is that all of these environments are managed from a single, centralized and familiar console: Microsoft System Center. This greatly reduces the learning curve in rolling out VDI deployments.

Conclusion

For many businesses and IT professionals, this is not the first heralding of the oncoming rush of the VDI bandwagon. This time, however, the reality supersedes the hype. Why?

- The overall growth of virtualization throughout organizations of all sizes
- The beefing up of networks, storage and server infrastructures as virtualization has increased
- The advances offered by Microsoft and AMD in enhancing the potential for a rich user experience in VDI environments
- The innovations delivered by AMD that enable a rich user experience on thin clients
- The opportunity to have, by using AMD as a platform, an infrastructure that is optimized from end to end for combined server virtualization and VDI

For midsize businesses, it's time to forget about the earlier hype around VDI. This is really the first time to take a second look. Odds are you will like what you see.

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