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Introduction

In the past, IT administrators, especially in the education or SMB space, may have felt that desktop virtualization technology was too expensive. But recent improvements in desktop virtualization technology and datacenter servers are making it easier and more economical than ever before. One of the biggest cost drivers for desktop virtualization has always been storage. For any desktop virtualization solution, it was previously thought that a robust, high-end shared storage device would be needed to provide system high availability.

However, businesses need to thoroughly re-evaluate the costs and features like high availability, live migration and VM failover are necessary in a virtual desktop environment. While they are desirable, a lot of times businesses are just not interested, or may not benefit from these "high-end" features that drive up the overall solution cost. If you have to complete smaller-scale projects like upgrading a couple of labs or setting up demo kiosks; a cost-effective desktop virtualization solution is more valuable as it sacrifices a few 'high availability' features to control costs. Or, if you are looking for a simple solution to pilot the capabilities of desktop virtualization for a larger initiative, a simple-to-deploy, low-cost solution would expedite time-to-value.

Desktop virtualization can revolutionize your desktop operations and eliminate pain points like security, management, support, etc. Once you have implemented a desktop virtualization solution, you no longer have to worry about support—whether it’s dispatching a technician to numerous remote sites, or keeping track of hardware inventory, warranty and/or leasing information, or losing critical data or intellectual property. You also do not have to worry about patching a ton of client devices or filling your WAN links with backup jobs over night-jobs that may or may not always complete successfully. With desktop virtualization, your end user data never leaves the datacenter and is backed up over the speedy and inexpensive datacenter LAN.

If cost concerns have kept you from considering a virtual desktop solution in the past, or you were worried that your server, network and storage hardware in the data center did not support the kind of user density that would make desktop virtualization a cost-effective solution, look no farther. Based on your feedback, Dell and Citrix have collaborated to offer a simple yet cost-effective XenDesktop desktop virtualization solution specifically designed with you, the IT Administrator in mind. Through this unique partnership, both Dell and Citrix recognized the need to simplify the process of calculating desktop virtualization hardware and storage sizing to provide you with a single, unified solution that brings all the benefits desktop virtualization to your finger tips for only $200 per seat.

In the past, desktop virtualization hardware and storage sizing was a painful process that didn’t quite prove to be cost effective. From a server perspective, the servers that were available in 2008 were limited to 4 cores and 8 GB of RAM, effectively limiting the number of virtual desktops per server to 12. In a span of five years, taking us into 2013, server capabilities have increased significantly to 16 cores and 256 GB RAM, which means
now up to 112 users can be supported on a single server (this number would have been more but Windows 7 requires more RAM than Windows XP)- a 933% increase from 2008. All this translates to more number of users being supported (user density) with costs generally remaining the same, dramatically reducing the server cost per user/seat. Desktop virtualization cost has plummeted coming down from an astronomical $800-$900 server cost per virtual desktop in 2008 to a manageable $200 in 2013. All of a sudden, providing all the server, processing power, and storage at a price point of only $200 a virtual desktop is looking a lot better than a physical $400 desktop, or the $600 laptop.
Dell $200 per seat Desktop Virtualization Solution

Let’s examine the components of this $200 per seat solution. For a very small deployment, or pilot effort to test the architecture, Dell and Citrix have come up with an integrated Citrix XenDesktop desktop virtualization solution for up to 90 users on one single Dell server. This architecture is non-distributed with all VDI, management, and storage functions installed on a single physical host running either VMware vSphere or Microsoft Hyper-V hypervisors. If additional scaling is desired, you can seamlessly grow into a larger distributed architecture by simply adding more servers and continuously leveraging your existing investment.

The compute and management software are both pre-installed on the same physical server to keep costs down. As you scale up, these functions are installed on separate servers and shared storage can now be introduced; as the environment scales, shared storage becomes much more cost effective. It should be noted that the $200 per user/seat is only the cost of Dell hardware, software and licensing. The cost of Citrix and Microsoft licensing is not included in that price point, but even with Citrix XenDesktop and Microsoft VDA licensing included, the overall price of the solution is the same or less than the cost of a physical desktop.
Dell PowerEdge R720

The server platform for the DVS Enterprise solution is the best-in-class Dell PowerEdge R720 (12G). This dual socket CPU platform runs the fastest Intel Xeon E5-2600 family of processors, can host up to 768GB RAM, and supports up to 16 2.5” SAS disks. The Dell PowerEdge R720 offers uncompromising performance and scalability in a 2U form factor.
4 Citrix Components

4.1 Citrix XenDesktop

Citrix XenDesktop delivers Windows apps and desktops as secure mobile services. With XenDesktop, IT can mobilize the business, while reducing costs by centralizing control and security for intellectual property. Users can self-select apps from an easy-to-use app store that is accessible from tablets, smartphones, PCs, Macs and thin clients. HDX technologies enable XenDesktop to deliver a native touch-enabled look-and-feel that is optimized for the type of device, as well as the network conditions. XenDesktop is built on an architecture that offers simple, powerful configuration and operations management and cloud-style automation and scalability.

Overall XenDesktop solution components include the following:

**XenDesktop Delivery Controller**

The XenDesktop delivery controllers manage and maintain user access to the virtual apps and desktops located in the datacenter.

**XenDesktop Virtual Delivery Agent (VDA)**

The Virtual Delivery Agent is a small software agent that gets installed on the virtual machine that provides the virtual desktop or application to the user.
XenDesktop Apps and Desktops
XenDesktop enables any type of Windows app or desktop hosted on a Windows Server or Desktop OS running in a private or public cloud to be centrally managed and delivered on-demand to thousands of users worldwide.

Citrix StoreFront
StoreFront provides self-service subscription to applications and desktops via an enterprise application store, giving employees convenient access to all the applications they need.

Citrix License Server
Every Citrix product environment must have at least one shared or dedicated license server which manages and controls access to virtual app and desktop resources based on associated product licenses.

Database
XenDesktop uses a SQL database to store all the configuration, session, logging, and monitoring information for accessing virtual apps and desktops.

Citrix Receiver
Citrix Receiver is an universal thin client that runs on virtually any device operating platform, including Windows®, Mac®, Linux®, iOS® and Android®. This is the one client you need to access the Windows virtual desktop from any device.
5 Shared Storage Benefits

As previously mentioned, the $200 per seat pricing does not include some of the enterprise features such as high availability, higher user support and dynamic motion, which you might ultimately desire, but this Dell and Citrix solution can be upgraded to include those features. If you choose to upgrade from local storage to a shared storage, Dell offers a simple upgrade path—there is no need for you to start over again.

Dell has two storage offerings for shared storage depending on your preference. If iSCSI is the preferred storage protocol, then the Dell EqualLogic array is available for your storage section of the desktop virtualization solution. Dell’s iSCSI technology provides compelling price/performance in a simplified architecture while improving manageability in virtualized environments. Specifically, iSCSI offers virtualized environments simplified deployment, comprehensive storage management and data protection functionality, and seamless VM mobility. Dell iSCSI solutions give customers the “Storage Direct” advantage – the ability to seamlessly integrate virtualization into an overall, optimized storage environment.

If Fibre Channel is preferred, based on Fluid Data architecture, the Dell Compellent solution is available. The Dell Compellent Storage Center SAN provides built-in intelligence and automation to dynamically manage enterprise data throughout its lifecycle. Together, block-level intelligence, storage virtualization, integrated software and modular, platform-independent hardware enable exceptional efficiency, simplicity and security.
6 Conclusion

Don’t let the cost of desktop virtualization restrict your ability to virtualize the desktop. With the availability of the $200 per seat offering, Dell has made desktop virtualization simple and cost-effective. Don’t get stuck trying to master the art of virtual desktop server and hardware sizing, Citrix and Dell have done the work for you and made it easier than ever to deploy desktop virtualization. Contact your Dell sales representative to get started today.
About the Author

Manish Chacko is a Sr. Technical Marketing Advisor for Citrix-based solutions at Dell. Before writing about technology, Manish has spent time designing, implementing and supporting technology in IT, Systems Engineering & Network Performance/Monitoring. Manish has been a long-time Dell customer & Advocate before becoming a Dell employee.

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