DELL VIRTUAL LABS WITH CITRIX VDI-IN-A-BOX

Citrix VDI-in-a-Box allows customers to implement a virtual lab in as little as an afternoon, and incrementally grow their deployment as their needs grow. Citrix VDI-in-a-Box simplifies implementation and lifecycle support with a grid architecture that leverages industry standard server configurations without requiring shared network storage.

Citrix VDI-in-a-Box is a simplified and cost-effective solution that provides a local desktop-like experience, enabling smaller entities with limited budgets and IT staff to gain the benefits of desktop virtualization. An all-in-one solution, it can be managed by desktop IT professionals without requiring detailed specialized experience. Simplicity is achieved by integrating multiple components including connection brokering, load balancing, desktop provisioning and management into a Citrix VDI-only desktop virtualization solution.

While deployment size is important, the solution is architected to reflect the behavior of the smaller deployments and specifically focuses on the following attributes:

- **Easy to deploy and manage** — all-in-one software

- **Rich end user experience** — leverages Citrix HDX for a rich user experience

- **Simple grid infrastructure** — provides linear and predictable expansion

- **Justifiable capital expense** — rapid ROI for deployments of departmental or lab implementations

- **Focused on VDI implementation** — no specialized experience required

Citrix VDI-in-a-Box makes it easy for customers with smaller deployments to realize the business benefits of virtual desktops with minimal upfront investment.

Dell Citrix VDI-in-a-Box Reference Architecture Solution Overview

Enterprise VDI

A typical Enterprise VDI deployment architected for production-level usage with high-availability includes the following components as illustrated in the left-hand side of the figure on the next page:

Provisioning servers: These management servers control the dynamic provisioning and de-allocation of virtual desktops. Typically, a minimum of two provisioning servers are required for high-availability.

Dell Citrix VDI-in-a-Box Reference Architecture Solution Overview
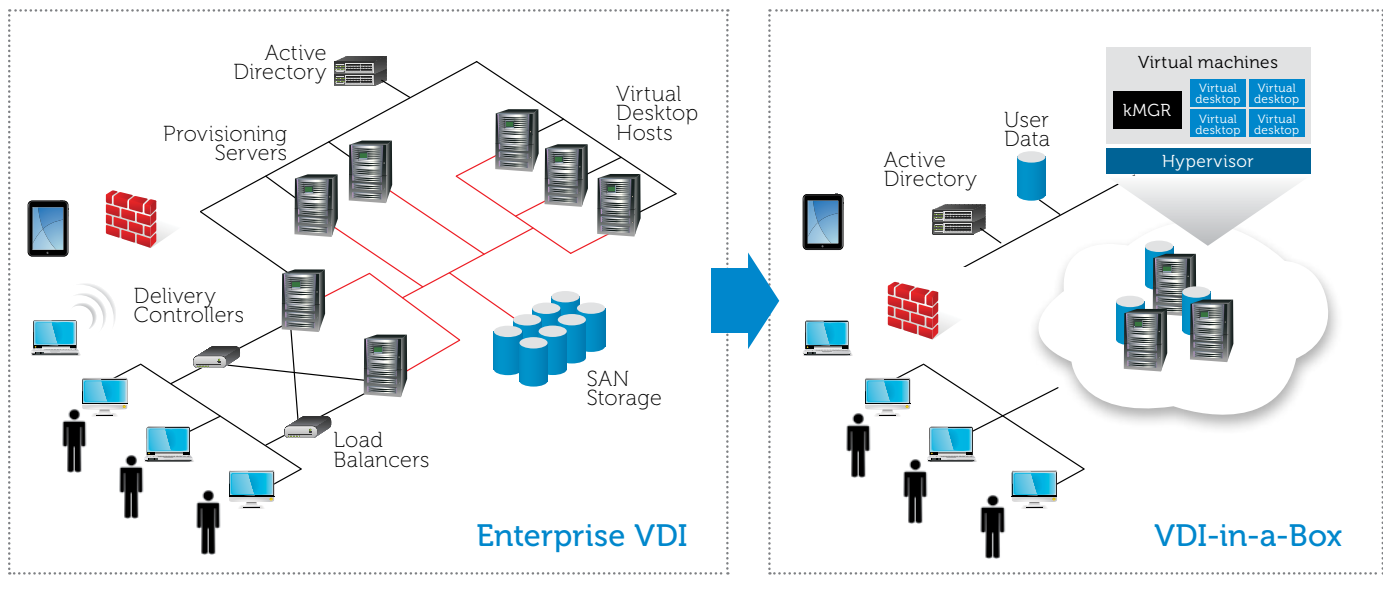
Delivery controllers: These servers manage and broker the end-user connections to the virtual desktops. Typically, a minimum of two delivery controllers/connection brokers is required for high-availability.

Virtual desktop hosts: These are the servers that run the virtual desktop workload, and the number of these depends on their capacity and the sizing guidelines of the VDI solution.

Load balancers: A minimum of two load balancers are typically placed in front of the delivery controllers to evenly distribute the desktop workload.

Shared storage SAN: Shared storage is required to create a centralized storage resource pool for running virtual desktops, so that in the event of a server failure, a different VM host can pick up the desktop state from the SAN and run the desktops.

High-speed interconnects: Typically, for performance reasons, high-speed interconnects are used among these components.

While this Enterprise VDI architecture is cost-effective for large deployments, it requires a sizeable investment that may not be efficient for smaller deployments.

Citrix VDI-in-a-Box

Citrix VDI-in-a-Box, illustrated in the right-hand side of the figure, consolidates various VDI software and management components into a single integrated software that can run on Dell's enterprise class PowerEdge servers.

The Citrix VDI-in-a-Box software includes:
- Built-in delivery controller/ connection broker
- Built-in load balancing
- Built-in desktop provisioning engine
- Built-in user management
- Built-in grid engine to deliver high-availability

Citrix VDI-in-a-Box uses a grid architecture that makes expansion easy, and delivers high-availability without requiring externally attached shared storage (e.g., SAN). To expand a Citrix VDI-in-a-Box deployment, simply load Citrix VDI-in-a-Box on additional PowerEdge servers and add the new servers to the Citrix VDI-in-a-Box grid by answering two simple questions in the Citrix VDI-in-a-Box management software. Citrix VDI-in-a-Box automatically prepares the new servers with the appropriate desktop images, and load balances the desktop workload across the grid.

	Platform	Application	Software Installation	Create New File	Insert Object	Save File	Save File as	Open File	Export File
BASE OS	WinXP SP3 32 bit	Notepad	●	●	●	●	●	●	●
		MSPaint	●	●	●	●	●	●	●
	WIN 7-32 bit	Notepad	●	●	●	●	●	●	●
		MSPaint	●	●	●	●	●	●	●
	IOS 4.3.2	Notepad	●	●	●	●	●	●	●
		MSPaint	●	●	●	●	●	●	●
	Android 3.0.1	Notepad	●	●	●	●	●	●	●
		MSPaint	●	●	●	●	●	●	●
MS OFFICE 2010 SUITE	WinXP SP3 32 bit	Word	●	●	●	●	●	●	●
		Excel	●	●	●	●	●	●	●
		Power Point	●	●	●	●	●	●	●
		OneNote	●	●	●	●	●	●	●
		Project	●	●	●	●	●	●	●
	WIN 7-32 bit	Word	●	●	●	●	●	●	●
		Excel	●	●	●	●	●	●	●
		Power Point	●	●	●	●	●	●	●
		OneNote	●	●	●	●	●	●	●
		Project	●	●	●	●	●	●	●
	IOS 4.3.2	Word	●	●	●	●	●	●	●
		Excel	●	●	●	●	●	●	●
		Power Point	●	●	●	●	●	●	●
		OneNote	●	●	●	●	●	●	●
		Project	●	●	●	●	●	●	●
	Android 3.0.1	Word	●	●	●	●	●	●	●
		Excel	●	●	●	●	●	●	●
		Power Point	●	●	●	●	●	●	●
		OneNote	●	●	●	●	●	●	●
		Project	●	●	●	●	●	●	●
ADOBE CS5	WinXP SP3 32 bit	Photoshop	●	●	●	●	●	●	●
		Illustrator	●	●	●	●	●	●	●
		Premier	●	●	●	●	●	●	
	WIN 7-32 bit	Photoshop	●	●	●	●	●	●	●
		Illustrator	●	●	●	●	●	●	●
		Premier	●	●	●	●	●	●	
	IOS 4.3.2	Photoshop	●	●	●	●	●	●	●
		Illustrator	●	●	●	●	●	●	●
		Premier	●	●	●	●	●	●	
	Android 3.0.1	Photoshop	●	●	●	●	●	●	●
		Illustrator	●	●	●	●	●	●	●
		Premier	●	●	●	●	●	●	●
AutoCAD	WinXP SP3 32 bit Win7 32 bit IOS 4.3.2 Android 3.0.1	AutoCAD	●	●	●	●	●	●	●
MATLAB	WinXP SP3 32 bit Win7 32 bit IOS 4.3.2 Android 3.0.1	MATLAB	●	●	●	●	●	●	●
MATHEMATICA	WinXP SP3 32 bit Win7 32 bit IOS 4.3.2 Android 3.0.1	MATHEMATICA	●	●	●	●	●	●	●
SPSS	WinXP SP3 32 bit Win7 32 bit IOS 4.3.2 Android 3.0.1	SPSS	●	●	●	●	●	●	●
SAS	WinXP SP3 32 bit Win7 32 bit IOS 4.3.2 Android 3.0.1	SAS	●	●	●	●	●	●	●

How Was Testing Done?

As noted in the previous table, applications listed completed 10 testing cycles without issue. To maintain integrity and ensure results were not affected by system caching, each testing cycle included the creation of unique files with unique images and graphs imported.

Applications were tested on the following platforms: Dell OptiPlex 980 running Win7; Dell FX 160 running Win; Dell FX130 running WES 7; Dell FX170 running WES 7; Dell FX170 running WES 2009; Dell Latitude 13 running Windows XP; Dell Adamo 13 running Win7; iPad2 running iOS 4.3; Motorola Xoom running Android 3.0 with flash upgrade; iPhone running iOS 4.3; iMac running OSX Lion; MacBook Air 2011 (Core I5) running OSX Lion.

Test Findings

While most applications worked seamlessly during testing, the Dell Solutions Laboratory observed the following:

- If running SAS and SPSS, Dell suggests running with no less than 3GB of RAM.

- Dell found that Adobe Premier worked well after the video was fully buffered, but the video displayed jittery upon first start up. Dell is researching a resolution.

- Linux-based thin clients such as the FX130 are not compatible with XP Virtual Machines because of licensing and protocol considerations. However, this thin client can connect to Windows 7 machines, when connected through RDP.

- On Mac OSX Lion, the mouse/touchpad lagged slightly. This does not pose an issue unless in MS Paint. Dell is continuing testing to find out if this issue persists with a non-multi-touch input device.

- When initially opening AutoCAD on all Virtual Machines, users may receive a 'Heidi driver load fail' error. At this point, however, AutoCAD will revert to standard drivers and all standard functionality will work as expected.

- The Citrix VDI-in-a-Box platform works nearly the same as the Citrix Xen Server 5 environment, but in a much more compact environment. While limited sometimes in scope by the hardware, it handles the higher end applications with ease.

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