

# Dell Wyse Datacenter for Virtual Labs with Citrix® XenDesktop®

A secure, robust, and cost-effective way for higher education institutions to stay on the technological cutting edge.

Higher education institutions face unique challenges as they attempt to accommodate increasingly mobile students and help faculty members stay connected with constant, reliable access. Institutional IT staffs are already overworked, and often the cost of the technology itself — combined with the need for a robust infrastructure to support it and dedicated personnel to manage it — can be prohibitive. How can colleges and universities deploy useful technology solutions without breaking the bank and straining the staff?

Desktop virtualization is one answer. It lets institutions transform the ways they provide computing resources to students, faculty, and administrators by moving application processing from a physical desktop to the data center. It's an approach that gives students and staff an anywhere, anytime computing environment; simplifies the process of delivering applications to many types of devices; and empowers distance learning — all while freeing up IT staff so they can focus on more strategic opportunities. It also gives IT tighter control over access, security, and storage of data.

Is desktop virtualization easy to deploy? Not always. Colleges and universities — all of which have diverse sets of IT concerns based on their size, student population, and other factors — face a bewildering array of choices, and best practices or standards have often been lacking. Various vendors have offered pieces of the solution, but it's been up to the institution itself to bring the pieces together and solve the practical problems.

Until now. Dell Wyse Datacenter for Virtual Labs — developed through research and practical application — successfully combines the advantages of desktop virtualization with expertise that provides an end-to-end solution. This solution — built on the architecture of the Dell Wyse Integrated Solution Stack — guides education institutions through implementation and removes the complexity involved with deploying a virtualized desktop environment.

It's an approach that gives students and staff an anywhere, anytime computing environment; simplifies the process of delivering applications to many types of devices; and empowers distance learning — all while freeing up IT staff so they can focus on more strategic opportunities.





## Virtualized Desktop Environments Offer Big Benefits

A virtualized desktop environment brings all sorts of benefits to higher education institutions. It lowers maintenance costs, provides more efficient remote access, improves data security, and lets campus leaders provision services. A virtualized desktop environment makes it possible to:

### Create Anytime, Anywhere Access

The average higher education institution has 97 unique labs, but the reality is that students and faculty are on the go and want access regardless of where they happen to be. Desktop virtualization allows for access from any device, eliminates the need to travel to a traditional computer lab, and enables distance learning.

### Reduce IT Management Time

For many higher education institutions, upgrading and ensuring devices are in working order can monopolize IT's time. It's estimated that each client device in a lab requires three to four hours of staff time per year for maintenance alone. Eliminating this maintenance allows staff to complete higher value strategic work. And IT can provision applications — and entire classrooms — on demand.

### Increase Security

With more — and increasingly diverse — end-user devices out there than ever before, challenges abound, including securely separating an institution's information from the user's information, and guarding against theft. For most institutions, the loss of personal information is not only embarrassing but also very expensive. Hacked systems can lead to the forced shutdown of entire data centers for days at a time. Centralizing the control of data and security requirements can reduce data loss and substantially improve the disaster recovery solution.

### Consolidate and Repurpose Labs/Conserve Real Estate

Giving students anytime, anywhere access on their personal devices allows institutions to consolidate and repurpose lab space, which can likely be put to better use.

### Enable Tracking and Reporting

Effective management requires that leaders have comprehensive reports. High-level dashboard views, as well as detailed reporting of systems by defined periods, peak usage, user groups, and application all lead to better management of limited resources. Desktop virtualization also helps enable better tracking of software license usage from both a compliance and monitoring perspective.





## Key Considerations: Asking Questions, Getting Answers

As you evaluate desktop virtualization solutions, be sure to ask these questions:

**Is the desktop virtualization solution based on open standards**, without the reliance on proprietary hardware or software? Open standards allow the greatest degree of interoperability between applications and their supporting hardware while improving the staff time required to manage and support the environment.

---

**Does the proposed solution provide interoperability** with current solutions so that the user's experience is the same whether accessing files, databases, e-mail, or while viewing any form of video or streaming media?

---

**Has the solution been thoroughly validated** using a well-thought-out methodology of stressing both the hardware and software in configurations that replicate those found in the higher education environment?

---

**How easy is it to scale the solution either upward or downward?** Does the solution limit the institution to a fixed configuration by way of either hardware or software? Is a modification of the configuration a simple modular change, or does it require a wholesale change-out of components?





## Dell Wyse Datacenter for Virtual Labs: Building on Reliable Architectures

Dell Wyse Datacenter answers all those questions, removing complexity and uncertainty by leveraging purpose-built hardware, software, and services to enable multiple capable architectures that maximize IT control while enhancing the end-user experience. Dell uses industry-standard ingredients so customers have a clear path to upgrades and full support throughout the life of an open solution, without sacrificing choice and flexibility. Dell also partners with Citrix to provide solutions that fit your needs.

### Dell Wyse Datacenter for Virtual Labs:

**Guides the effective implementation** of the entire desktop virtualization process from feasibility through ongoing operations.

**Expands on Dell Wyse Datacenter** and leverages its pre-packaged, configured, and tested hardware, software, and services to enable faster implementations and remove complexities.

**Uses a virtual appliance and agent software**, deployed on the network, to gather detailed data from every desktop targeted for virtualization. The outcome is an expansive and detailed report of the desktop environment and user profiles.





## The Benefits of Citrix XenDesktop

Dell Wyse Datacenter Integrated Solution Stack is pre-packaged, pre-tested, and preconfigured to run on Citrix XenDesktop 7.5, which provides a complete end-to-end solution that delivers Microsoft Windows 7 or 8 virtual desktops to users on a wide variety of endpoint devices. Virtual desktops are dynamically assembled on demand, providing users with pristine, yet personalized desktops each time they log on. It's a complete virtual desktop delivery system. Adding desktops without adding infrastructure...it's a great solution.

Citrix XenDesktop integrates several distributed components with advanced configuration tools that simplify the creation and real-time management of the virtual desktop infrastructure:

- **XenDesktop Controller:** Installed on servers in the data center, the controller authenticates users, manages the assembly of user's virtual desktop environments and brokers connections between users and their virtual desktops.
- **XenDesktop Database:** This Microsoft SQL database hosts configuration and session information and, as a result, should be hosted on a resilient database platform.
- **Citrix Provisioning Server (PVS):** This component lets you stream a single desktop image to create multiple virtual desktops on one or more servers in a data center. It greatly reduces the amount of storage required compared to other methods of creating virtual desktops.
- **Citrix NetScaler VPX:** Integrated local and global server load balancing and secure remote access ensure improved availability of Citrix XenApp services and Citrix XenDesktop deployments. It provides security and reliability while avoiding capacity over-provisioning.
- **Virtual Desktop Agent:** Installed on virtual desktops, the agent enables direct Independent Computing Architecture (ICA) connections between the virtual desktop and users' endpoint devices.
- **Citrix Desktop Receiver:** This software runs at the endpoint to let it connect to a virtual Windows 7 or 8 desktop running on a server.
- **Hypervisor Integration:** XenDesktop can be used in conjunction with Citrix XenServer, Microsoft Hyper-V® or VMware ESX/vSphere® for the provisioning of virtual machines. This reference architecture was tested using VMware vSphere.
- **Active Directory Integration:** XenDesktop requires Active Directory for security services, but unlike previous versions of XenDesktop, the directory is no longer required by default for Controller discovery.

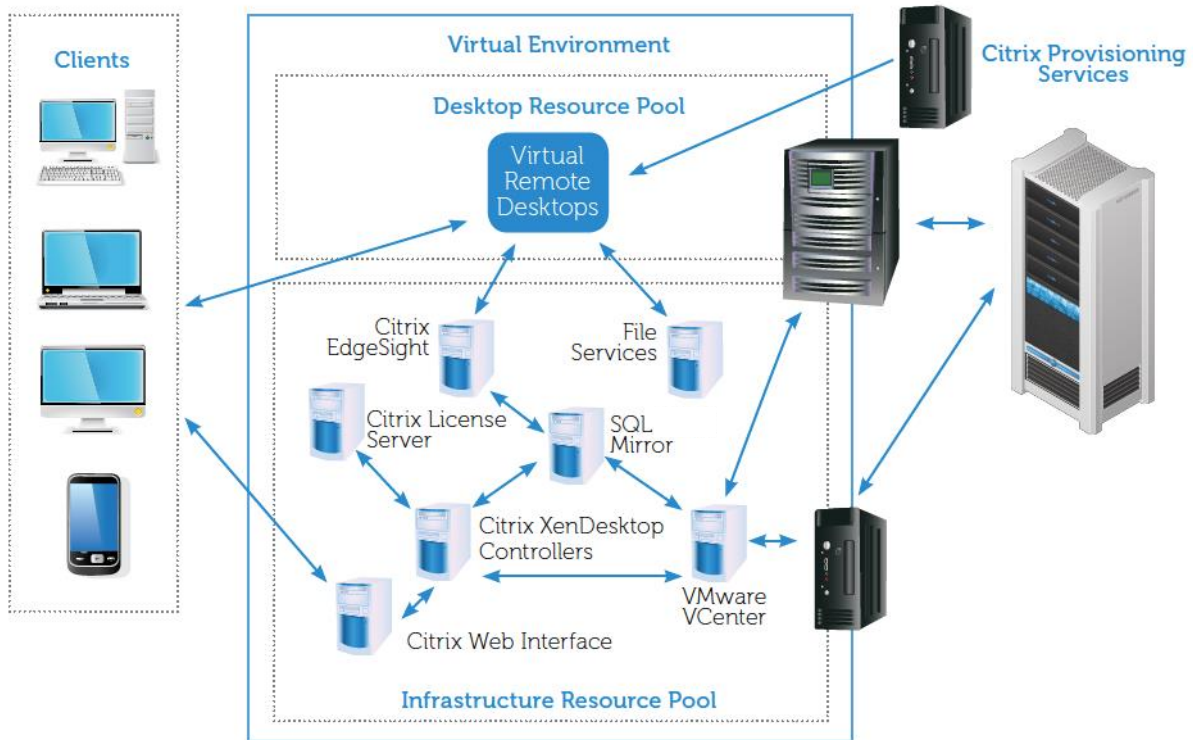
The Dell Solutions Laboratory — along with Citrix — has spent over 100,000 person hours testing configurations to identify the right scenarios and develop stable and scalable solutions. Dell knows it's critical for higher education institutions to have software that works correctly and meets the needs of students and staff. Six of the most frequently used software programs have undergone extensive testing and have been validated:

- Adobe® Creative Suite (Photoshop®, Illustrator®, Premiere Pro®)
- Autodesk® AutoCAD®
- Wolfram Mathematica®
- MathWorks® MATLAB®
- SAS®



- IBM SPSS

## Citrix XenDesktop on vSphere Enterprise HA Bundle



### Compatible Applications:

- Notepad®
- Microsoft® Paint
- Microsoft Office® 2013 and 2013 suite (Word, Excel, Power Point, OneNote, Project)
- Adobe CS
- AutoCAD®
- MATLAB
- MATHEMATICA
- SPSS®
- SAS

### Compatible Platforms:

- Microsoft Windows® 8 and Windows 8.1 (32 and 64 bit versions)
- Windows 7 32 bit
- IOS®
- Android™

### Functions Supported:

- Create new file, insert object, save file, save file as, open file, export file





## Dell and Citrix: Working Together to Empower Your Mobile Workforce

Dell partners with Citrix to deliver the end-to-end desktop virtualization solutions that today's mobile workforce needs.

### [Dell Wyse Datacenter VRTX for Citrix XenDesktop®](#)

This solution is the first integrated IT solution designed specifically for remote-office and small-office environments with up to 500 users. The Dell PowerEdge VRTX is a customer-inspired design that meets their need for reduced complexities by combining servers, storage, and networking into a compact chassis while still offering the power to efficiently support virtualized environments and workloads. The solution is easy to deploy, configure and manage – often for a limited number of virtual desktops and without on-site IT support

### [Dell Wyse Datacenter for Citrix XenDesktop®](#)

This solution is ideal for organizations of 50 to 50,000 users where a sophisticated IT environment and IT resources require robust, flexible, and highly scalable desktop virtualization at an optimal price/performance ratio for their workload. It provides a purpose-designed architecture based on industry standards and gives you a wide variety of options through an array of prequalified components.

### [Dell Wyse Datacenter for Virtual Workstations](#)

This solution is designed to offer Dell Precision-class high performance workstation functionality in a secure, efficient and optimized virtual desktop environment with certified applications. It leverages Citrix XenDesktop as the desktop virtualization platform, and graphics virtualization enabled through NVIDIA GRID graphics cards to deliver seamless, reliable, high-performance access to data and graphically intensive applications. When coupled with the Citrix XenServer hypervisor and NVIDIA GRID graphics cards, the solution allows greatly increased user densities – up to 64 workstation-class users on a single Dell PowerEdge R720.





## Getting Started

Getting started with Dell Wyse Datacenter for Virtual Labs is easy. If you represent a large institution that needs a sophisticated, enterprise-class virtualization environment, then Dell Wyse Datacenter for Virtual Labs with Citrix XenDesktop is the right solution for you. It can be used with large-scale deployments — up to 50,000 or more users — and is feature-rich with robust management capabilities.

Dell also offers a smaller pilot option with Citrix XenDesktop that lets you start with as few as 50 users and scale to as many as 50,000 without a forklift upgrade. It's a cost-effective way to pilot small but have 100 percent of your investment reusable for the full large-scale deployment you will require later.



## Make the Right Move

Desktop virtualization helps higher education address the unique challenges of academic computing. It provides accessibility to an increasingly mobile student population, allows the IT department to deploy and upgrade software quickly and efficiently, and helps institutions capture ROI throughout the lifecycle of the program. Dell Wyse Datacenter for Virtual Labs simplifies the desktop virtualization process from discovery to deployment to support, helping ensure that every institution makes the right choices.

---

Dell is a premier provider of computer products and services on which colleges and universities build their information technology and Internet infrastructures. Dell listens to customers and delivers what they value: comprehensive solutions to achieve educational and research goals. Dell designs, manufactures, and tailors products and services to customer requirements and offers an extensive selection of software and peripherals. For more information, visit [www.dell.com/hied](http://www.dell.com/hied) and [www.dell.com/virtuallabs](http://www.dell.com/virtuallabs).

