



Citrix and Citrix Ready Partners Enable Virtual Desktops for Every User

This white paper presents Citrix's Vision to simplify IT through desktop virtualization and give customers the flexibility to deliver any type of virtual desktop to any user, with one centralized solution. Citrix provides enterprise-class and best-value solutions that make desktop virtualization a mainstream reality for a broad set of use cases.



Introduction

Many companies are rethinking their overall desktop management strategies to optimize IT infrastructure, and at the same time, they are looking to derive maximum value from their IT investment. With the awareness of desktop virtualization spreading wider and its benefits becoming evident, companies prefer to adopt new and powerful solutions to deliver and manage desktops. Some of the challenges in adopting a desktop virtualization solution include responding to users' needs and providing a consistent user experience.

The Citrix Ready Open Desktop Virtualization Program is designed to leverage the open architecture of XenDesktop 4, to allow customers to choose from a variety of trusted technology providers, and simplify their virtual desktop deployment. The built-in features of Citrix XenDesktop 4 make virtual desktops cost-effective and give customers one seamless solution for desktop and application delivery.

This white paper introduces the robust partner ecosystem that the program incorporates, and the essential components comprising the following partner types:

Datacenter

- **Virtual Infrastructure** – delivers hypervisor virtualization software that hosts and manages virtual machines.
- **Storage and Backup** – provides software focused on increased performance, cost savings, and reduced storage for desktop images, user profiles, and end-user data.
- **Network** – provides solutions to accelerate network performance for best user experience.

Client Devices

- **Thin Client** – provides powerful end-point devices that support Citrix FlexCast™ delivery technology, for delivering any type of virtual desktop, to any user, on any device.
- **Printing** – simplifies print management by providing printing solutions and drivers that work in the virtual environment.
- **Unified Communication** – integrates business communication tools with virtualized applications.

Client and System Management

- **Client Management** – enables unified software management that supports different physical endpoint devices for virtual computing.
- **Profile Management** – provides software solutions that ensure easy management of user profiles, and applies users' personal settings to their virtual desktop and applications.
- **IT Security** – provides software for securing data and applications through centralized IT management.

The Citrix Desktop Virtualization Vision

Desktop virtualization is a great way to reduce management costs, make it easier to manage desktops, and is being looked at by IT. IT managers need to ensure that the solution they choose does not affect the user experience and allows the user to access their workspace from any device or location.

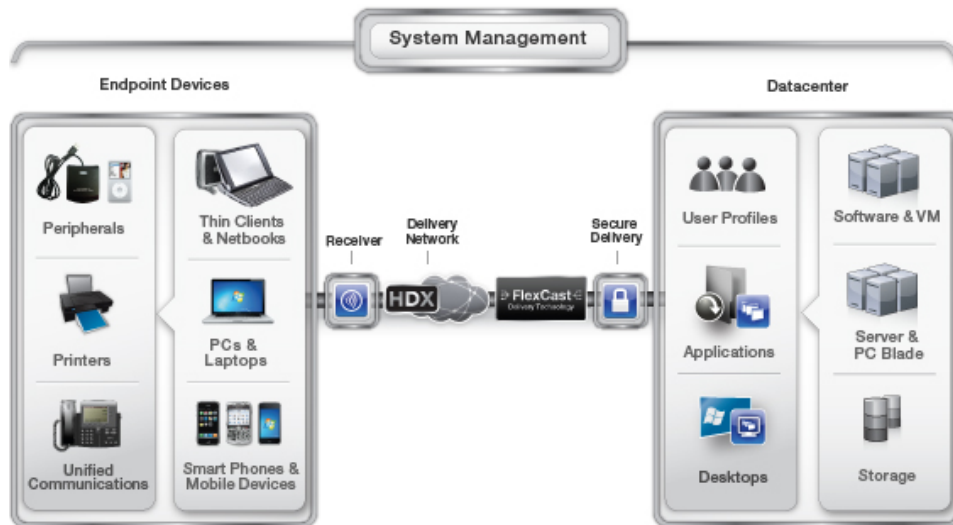


Figure 1: Citrix XenDesktop 4

Companies are looking at desktop virtualization to upgrade their approach to desktop management. Today, individual desktops are assembled and hard-coded one-by-one on an ongoing basis. State-of-the-art networks carry information at close to light-speed—yet IT staff needs to go onsite visiting one PC after another to perform even the most basic maintenance tasks. While there is no shortage of innovation to address fast-changing business requirements, the actual rollout of new technologies can take months, while burning quickly through scarce resources.

So, it is no surprise that IT executives everywhere are looking for a better way—the future of desktops. They start down the path of investigating desktop virtualization, but there is no clear understanding of what it means—only what it promises. It conjures images of a world where devices matter less and self-service, mobility, and flexibility are the norm. Desktops can be managed from one central location, updates and maintenance only needs to be done once to benefit all users.

Citrix XenDesktop 4 is a desktop virtualization solution that delivers Windows desktops as an on-demand service to any user, anywhere. Whether users are task workers, knowledge workers, or mobile workers, XenDesktop can quickly and securely deliver individual applications or complete desktops while providing a high-definition user experience.



Key XenDesktop 4 features:

- **Any device, anytime, anywhere** – instant and secure access to desktops from any location through a thin client, home PC, or mobile device. This enables complete workplace flexibility, business continuity, and user mobility.
- **HDX™ user experience** – high-definition experience on any device, over any network, even when using multimedia, real-time collaboration, USB peripherals, and 3D graphics that rivals a local PC.
- **FlexCast™ delivery technology** – deliver virtual desktops that meet unique requirements of diverse workforce; from simple and standardized desktops to high performance and personalized desktops, regardless of the end device.
- **On-demand apps by XenApp™** – enable end-users to self-service in adding, updating, and removing applications. Citrix's application virtualization technology equip IT administrators to control data access, eliminate system conflicts, and reduce application regression testing in an environment that has fewer desktop images.
- **Open architecture** – leverage current investments by working with existing hypervisor, storage, and Microsoft infrastructure. The open architecture provides great flexibility to support alternatives in the future.

The Citrix Ready Open Desktop Virtualization Program

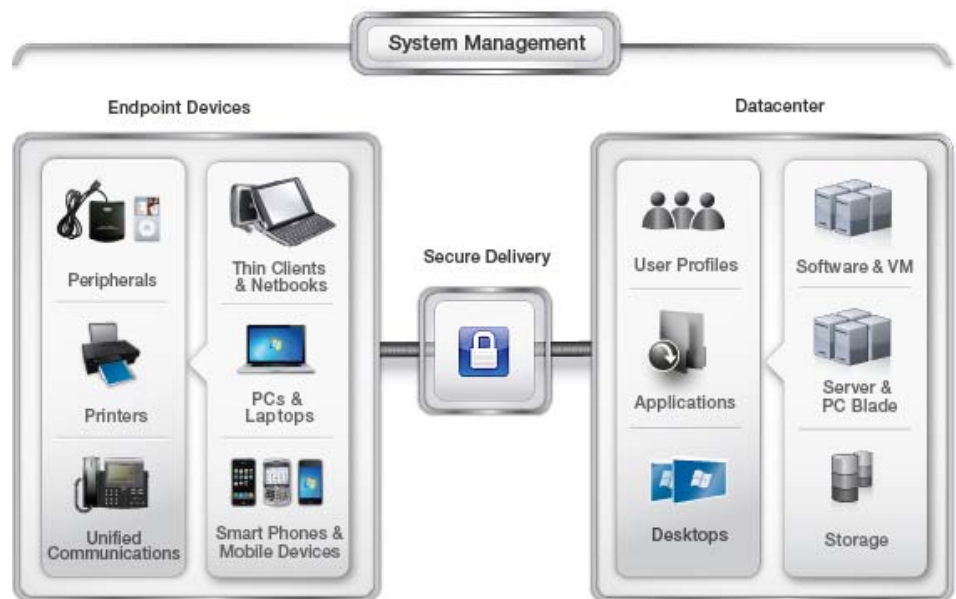


Figure 2: Citrix Open Desktop Virtualization Program Categories

Desktop Virtualization—the Big Picture

The Citrix Ready Open Desktop Virtualization Program is designed to ensure that customers of all sizes gain the confidence to successfully implement virtual desktops with all the capabilities of physical desktops, using virtual infrastructure, security, client management, storage, backup, and local printing.

The Citrix Ready Open Desktop Virtualization Program leverages the open architecture of XenDesktop 4, allows customers to choose from a variety of trusted technology providers, and simplifies their virtual desktop deployment.

Physical desktops require a broad ecosystem to roll-out, maintain, and enhance IT infrastructure, so does a desktop virtualization solution. Unlike other VDI vendors, Citrix has partners in all of the same areas as physical desktop deployments to help you with your virtual desktop deployment.

XenDesktop 4 is the only open-architecture desktop virtualization platform on the market that works with multiple virtualization hosting platforms, application delivery solutions, and endpoint devices. XenDesktop 4 supports every major server virtualization platform, including Citrix XenServer™, Microsoft Windows Server® Hyper-V™, and VMware ESX™, and simplifies management of networked storage using StorageLink™ technology. XenDesktop will also closely integrate with Microsoft App-V and System Center for application management.

Essential Components for Enterprises in Desktop Virtualization

The desktop virtualization ecosystem is built with the collaboration of heterogeneous components. These components are supplied by Citrix Ready Partners that are identified as preferred solutions. Companies demand smooth deployment of desktop virtualization with their existing IT infrastructure, to ensure business continuity and reduce technology expenditure. The integration of these existing technologies with desktop virtualization should also accommodate the current and future technical demands. Identifying the essential components to build this infrastructure is very challenging. Citrix simplifies this process and addresses these difficulties with Citrix Ready.



Datacenter

Virtual Infrastructure

Enabling High-Definition Performance in a Virtual Infrastructure

IT infrastructure tends to grow quickly in size and complexity over time. However, it is a common reality that existing IT infrastructure is often under-utilized.

IT departments have no choice but to spend more time and money managing infrastructure rather than working on IT solutions that make services robust, performance optimal, and availability high.

Virtual infrastructure provides a number of key benefits that include better utilization of available hardware, reduced capital and operational costs, cost savings on power, cooling and space, operational simplicity, and management flexibility. A virtual infrastructure is a computing environment where hardware resources of physical machines are available in a shared pool to be utilized across the IT infrastructure. This technology enables industry-standard servers to run in an environment where multiple virtual machines dynamically utilize the hardware power of a single physical machine. The virtual machines are software units that are hardware independent and work exactly like physical machines.

Storage

Storing Business Data on Secured and Centralized Systems

Growing business and an ever-expanding customer base demands better data storage capabilities to support the growing volume of data without a tradeoff on data security. Enterprises are looking at ways to reduce storage size, while keeping performance and data integrity optimal. Also, storing redundant data has adverse effects on storage space, data integrity, and cost. Efficient usage of raw storage capacity and quick expansion of the storage capacity are among the top priorities for an enterprise. Storage management solutions should scale up to match the computing speed of modern servers that support the rapidly adopted virtual computing.

Desktop virtualization harnesses the datacenter infrastructure to provide a server-centralized data storage approach that maximizes utilization, reliability, and high availability. Centralized data control helps in provisioning actual storage requirements for virtual desktops. Data de-duplication greatly reduces storage space consumption by eliminating redundant data. Desktop virtualization removes the overhead of storing core applications in each desktop, by hosting them on the central server. The instances of the core applications are streamed from the central server to the virtual desktop.

Citrix Ready Partners

Virtual infrastructure provides an environment for desktop virtualization to host and manage virtual desktops. Partners working with Citrix in delivering virtual desktop solutions from this shared dynamic environment are Microsoft Hyper-V, Citrix XenServer, VMware ESX, and VMware View.

Citrix Ready Partners

Desktop virtualization focuses on achieving performance and savings, while reducing storage requirements in an environment that includes desktop images, user profiles, and end-user data.

Partners working with Citrix in this effort are CA, Compellent, DataCore, LSI, NetApp, Pillar Data Systems, and REldata.

IT Backup

Quick and Reliable Data Backup in the Virtual Environment

Most enterprises cannot afford any form of significant data loss, be it from natural disaster, device failure, data deletion, or data corruption. With project executions happening from multiple office sites, firms need quick and reliable data backup processes.

Apart from server data, backing up data from the end-user's desktop is also important as it stores critical corporate information. A data loss at the desktop can impact productivity, and add to unnecessary cost. Companies, however, may not spend much time and money on installing recovery systems for their desktops because of the high cost involved and servers demanding priority, under constrained conditions. Adding to this are a number of known limitations that challenge data backup in general:

- Planning a backup window
- Compromising on performance
- Bearing the backup infrastructure (hardware, software, and labor) costs
- Sharing network bandwidth

Desktop virtualization brings backup as a service that is managed from the datacenter, using desktop backup strategies. Desktop backup is no longer a burden on the desktop or the end-user.

Furthermore, an IT administrator can unplug a desktop from the network as needed without the overhead of taking a backup, as the end-user's data is in the datacenter. In the event of a hardware failure, the user can simply log on from another end-device to access the desktop session in the same state just prior to the hardware failure. With virtualization, image-level and file-level backups do not hinder productivity and performance.

Network

Accelerating Network Performance for Best User Experience

Globalization has brought WAN (Wide Area Network) performance to the forefront in enterprises' endeavors to reach out to markets beyond geographical boundaries. WAN is now expected to deliver high-end performance, while being cost-effective. An increase in the mobile (on-the-go) user community has only added to the population on WAN. High availability and high performance of software applications and business services require continuous availability of a dependable network.

Firms are rapidly realizing the horsepower of desktop virtualization in reducing TCO (Total Cost of Ownership), increasing IT Security, and improving business performance; while giving diverse end-users a superior high-definition experience.

Citrix Ready Partners

Citrix is driving desktop virtualization to provide customers the key benefit of quick and reliable data backup, with speedy data recovery. The motive has been to provide 100% uptime by equipping end-users to directly recover their data from the backup or from a Disaster Recovery Site within minutes, in the event of a disaster.

Working with Citrix to deliver these benefits are CA, CommVault, Dell, IBM, and LSI.

Citrix Ready Partners

Citrix's innovative technologies provide advanced optimization and acceleration techniques, which are applied at key and relevant units in the virtual infrastructure. Partners working with Citrix on this are Ankeena and Vyatta.



Network latency and limited bandwidth may negate the purpose or become a bottle-neck for desktop virtualization. Applications rich in graphics, with 2D and 3D, and multimedia demand optimized WAN. Priority business applications, highly interactive remote-user environments, datacenter, and branch office systems are some of the key areas to be taken into account. Time-and-again up-gradation of hardware and bandwidth can be costly affairs.

Citrix has chosen to address high-latency and low-bandwidth network issues, as part of their drive to provide a best user experience through desktop virtualization.

Client Devices

Thin Clients

Simplifying Desktop Virtualization using Thin Clients

Thin clients have gained prominence in building a cost-effective and highly scalable virtualized IT infrastructure. Thin clients simplify desktop virtualization by increasing security, mobility, and cost savings. They are best in management—to manage all desktops from one central server—and lowering Total Cost of Ownership.

Desktop virtualization utilizing thin clients offers a number of advantages over traditional PC desktop deployments:

- Reduce total cost of ownership
- Ensure higher security of sensitive data
- Reduce energy consumption and costs
- Requires fewer refreshes

Printing

Printing from a Virtual Machine

The evolving virtual environments and sophisticated end-devices are simplifying business processes and product development environments, but complicating print management. The printing scenarios and print requirements are now numerous and will multiply as technology simplifies business. Though application execution and data storage can happen in remote and multiple locations, a print job has to happen on a printer local to the user.

Managing multiple print drivers (that are specific to individual printer models), protecting print data, compressing print files, and assigning network printers to users are some of the standard aspects of print management and administration.

Citrix Ready Partners

Desktop virtualization includes thin clients with out-of-the-box solutions and customizations from: Apple, Lenovo, Fujitsu, Sprint, 10ZiG, Chip PC, Computer Lab International, Dell, Devon IT, HP, IGEL, VXL, and Wyse.

Citrix Ready Partners

Citrix with desktop virtualization is simplifying print management with advanced solutions. Citrix has partnered ThinPrint, TriCerat, and UniPrint to make print management simple and efficient.

Virtual computing and remote user (home user and small office) environments require that a print management system, apart from providing the standard features, also provides features that recognize printers local to the remote user. For example, enable a remote user to print to a local printer connected to the user's machine.

These solutions provide a Universal Printer Driver that can support and recognize any printer (network printers and local printers), protect print data using channel protocols and print job encryptions, and provide hi-speed printing through bandwidth management and high compression of print files.

Unified Communication

Integrating Business Communication and Virtualized Applications

Unified communication brings all the communication applications and devices you are already familiar with into a single component, on the desktop virtualization platform. Unified communication integrates communication technologies with software applications that you use everyday.

This facilitates a consistent, unified, user interface for communicating across multiple devices and media types. Overall, unified communication empowers the use of both, real-time and non real-time communication services, through a familiar interface.

Today's communication-driven businesses demand more flexible, scalable, and productive communication services, to enable employees collaborate and work efficiently, and reduce costs at the same time. The communication services must be flexible enough to use any available mode of interaction, anywhere, anytime; this includes text messaging, chat, VoIP, desktop sharing, and video conferencing. It should be scalable, to be able to use a unified communication application from any device—a thin client, laptop, or smart phone.

Unified communication applications optimize your business productivity and let your employees leverage the benefits of uninterrupted interaction, wherever they go. Unified communication streamlines business processes, making communication tools more productive, and eliminates additional costs in the communication environment, and at the same time, improves IT efficiency.

Client and System Management

Client Management

Supporting Different Devices for Virtual Computing

Client management includes operating system deployment, application virtualization, license management, asset management, patch and vulnerability management, backup and restore, and data security management, across multiple computing devices in different locations.

Citrix Ready Partners

Unified communication provides a rich presence of all users—whether they are online, offline, on a call, or in a video conference. Citrix partners with Avaya, Microsoft, ShoreTel Citrix EasyCall, Citrix GoToMeeting, and Citrix Hi-Def Conferencing to provide Unified Communication solutions for desktop virtualization.



Citrix Ready Partners

Desktop virtualization simplifies client management by centralizing the operating system, software, client system management, and security management at a single location—the datacenter.

The Citrix partners for client management solutions include CA, HP, Microsoft, and Wyse.

In a traditional desktop environment, these tasks are time consuming, costly, and resource intensive. Client management in desktop virtualization provides a one-time approach to managing and maintaining operating systems, applications, and endpoint devices.

Existing client management suites have the capability to manage physical clients; however, a unified client management suite will be required to manage physical and virtual clients, thin clients, laptops, and mobile devices.

IT management teams face difficult client management challenges such as:

- Deploying and managing endpoint devices distributed around the globe
- Reducing operating and desktop maintenance costs
- Minimizing time taken to deploy new client devices
- Extending existing client device life-cycles with less refreshes
- Streamlining operating system management, upgrades, and patches

Unifying all client management functional elements at a single location optimizes the process of upgrading operating system and applications, monitoring the client systems, and applying security patches. This radically reduces administration time and cost, ultimately reducing TCO.

Profile Management

Easy Profile Management with Desktop Virtualization

There are several key challenges to provide a consistent user experience in a virtual desktop environment. It is imperative to provide users a consistent virtual desktop experience from any device, from any location, and at any time. IT managers need to ensure that users do not lose their data and personalized settings when they log off of their virtual desktops.

Profile management solutions provide an easy, reliable way for managing this data and settings in Windows environments to ensure a consistent experience by maintaining a profile that follows the user. These solutions auto-consolidate and optimize user profiles to minimize management and storage requirements, and require minimal administration, support and infrastructure, while providing users with improved log on and log off.

The latest profile management solutions for desktop virtualization are built with capabilities to increase user satisfaction and productivity, together with a consistent user experience.

It also provides reliable management of roaming profiles to ensure user data and personal settings remain with users. These profile management solutions handle profile bloat issues as well, enabling faster log-on times.

Citrix Ready Partners

The following Citrix Ready Partners provide profile management solutions for desktop virtualization: AppSense, RES Software, and TriCerat reduce administrative burdens by simplifying implementation and maintenance tasks, for better profile management.

IT Security

Safeguarding Enterprise Data and Intellectual Property

Desktop virtualization increases data and application security by centralizing IT management. This assures uninterrupted business continuity, by enforcing strong security measures on information, application, and mobile systems.

IT security is a great concern to companies. Safeguarding critical business data and intellectual property, especially when businesses are highly mobile, is a key challenge for IT management. Computing devices of on-the-go professionals are open to threat while connecting to an unsecured network.

Desktop virtualization provides IT security beyond corporate boundaries. This security extends to areas such as:

- Data protection against malicious hackers and intruders
- Security enhancement by leveraging application delivery
- Establishment of strict policies and guidelines for using applications
- Definition of user interaction with the applications
- Provision of granular access based on security settings

Citrix Ready Partners

Desktop virtualization addresses your overburdened security and compliance challenges using simplified Citrix solutions along with: Citrix Access Gateway, RSA, Kaspersky Lab, McAfee, RES Software, Sophos, and Trend Micro.



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About Citrix

Citrix Systems, Inc. (NASDAQ:CTXS) is the leading provider of virtualization, networking and software as a service technologies for more than 230,000 organizations worldwide. Its Citrix Delivery Center, Citrix Cloud Center (C3) and Citrix Online Services product families radically simplify computing for millions of users, delivering applications as an on-demand service to any user, in any location on any device. Citrix customers include the world's largest Internet companies, 99 percent of Fortune Global 500 enterprises, and hundreds of thousands of small businesses and prosumers worldwide. Citrix partners with over 10,000 companies worldwide in more than 100 countries. Founded in 1989, annual revenue in 2008 was \$1.6 billion.

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