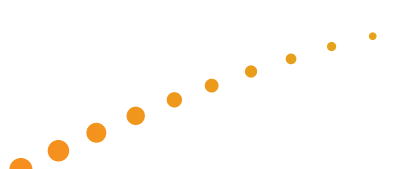




Citrix XenClient

Virtual desktops...to go





Mobile workforce demands flexible solutions for changing work-life requirements

Knowledge workers and mobile employees often cite the ability to work from anywhere, anytime as a key productivity enabler. The need to cut the proverbial cord to the enterprise network is a key IT priority that frees up employees to effectively juggle work duties and personal activities. IT departments are challenged to find the right balance in giving employee the right tools and flexibility, while exerting effective control and security over IT policies and practices.

Road warriors, contingent staff, work-from-home employees, and independent agents and contractors are some of the select groups of users who want a rich, powerful computing environment with a high-definition experience and the ability to work anywhere, anytime—even when offline.

Laptops offer an excellent choice for all the requirements outlined. Nonetheless, laptops do have associated risks that will need to be mitigated. Laptops can be lost or stolen, which may compromise sensitive corporate data. Data on laptops can be difficult to back up as the laptop may rarely connect directly to the corporate network. While users are on the road they may not consistently use corporate VPNs further isolating their systems from the corporate network. Users usually install non-supported software and store personal data that leads to application conflicts and inadvertent introduction of malware to the laptops—all leading to a large tech support burden with increased break and fix costs.

Secure local desktop virtualization is rapidly being adopted as the best approach to deliver virtualized Windows® desktops to mobile users and to overcome these key issues outlined above. However, most desktop virtualization products require that users be connected to the network or Internet connection to access their centralized desktop. Legacy local desktop virtualization products have inherent issues around product stability, performance impacts, and lack of hypervisor manageability.

Solution for secure anywhere, anytime access with better desktop management

In order to effectively address the requirements of highly mobile end users and IT departments, the ideal solution must adequately provide flexibility, performance, security and centralized management of laptops to help employees be productive while adequately addressing IT strategies and policies.

Desktop virtualization solutions provide an ideal approach to effectively address the unique needs of enterprise users. Desktop virtualization solutions with online and offline capabilities provide the additional benefits of enabling employees to work effectively anywhere by harnessing the full computing capabilities while being mobile with or without network connectivity.

Historically, legacy Type-2 virtual machine managers (VMMs) have attempted to address the needs of mobile users but have fallen short in various key requirements. Due to the fundamental architectural design of Type-2 VMMs, these products lack the stability, isolation, performance and security functionalities that most customers require.

Type-1 client hypervisors have clearly demonstrated superiority in the key areas that Type-2 products lack. Type-1 client hypervisors are uniquely designed to provide bare metal performance and security features that solve the issues of resource usage and instability that plague Type-2 products.

IT departments want the best of both worlds in offering their internal customers the flexibility that laptops offer and at the same time, be able to effectively enforce corporate IT policies. IT policies such as system security and data protection are often difficult to enforce for the highly mobile users in the enterprise. Type-1 client hypervisors with centralized management functionalities can help IT to apply consistent IT policies to help protect corporate data and assets that walk out with employees as they step outside corporate boundaries.

Citrix XenClient: An effective solution for secure local virtual desktops

Citrix® XenClient™ is the ideal desktop virtualization solution that can effectively provide the flexibility and performance that mobile laptop users seek and the security and control that IT administrators demand.

What is Citrix XenClient

XenClient is a true Type-1 client hypervisor that runs on bare metal and provides high performance and security. It is based on the same technology foundation as Citrix XenServer and industry-tested Xen virtualization technology used by the largest cloud computing providers in the world. XenClient lets users run multiple local virtual desktops simultaneously, side-by-side and in complete isolation. XenClient-powered laptop users can access their various virtual desktops anywhere, anytime—even while disconnected from the network. XenClient is optimized to run on Intel® vPro hardware virtualization technology to provide full 3D graphics and high-definition video.

Citrix XenClient Benefits

Citrix XenClient delivers the benefits of local desktop virtualization to mobile users, providing IT professionals the control they need while giving employees the flexibility to work from anywhere, anytime. Mobile users get the benefits of having different virtual desktops that help them to effectively isolate their work and personal spaces while using a single physical system. XenClient is the ideal client virtualization solution for any organization to align their business goals with IT priorities and desktop strategies.

- **Companies help mobile employees work effectively and enhance their productivity**

Mobility has cut the proverbial cord that ties employees to their desks and set them free to work from any physical location. Nonetheless, remote connectivity may be inconsistent and security issues are sure to arise when employees go outside the protected, firewalled corporate environment. XenClient enables employees to be mobile and work online or offline. Employees remain productive whether they are within the corporate network, travelling without connectivity, or working remotely from a home office, customer site, hotel, or other remote sites. Organizations can also choose to



provide their employees multiple virtual machines, including an environment for personal use that's strictly isolated from one used for business purposes. Offering employees sandboxed areas for their personal use limits the exposure of corporate data from malware introduced from personal use.

- **Companies lock down and secure corporate laptops to protect business data**

With XenClient, businesses can deliver an encrypted, locked down corporate desktop that provides users with the rich environment that they need to do their work. This approach protects valuable corporate data and intellectual property from theft and minimizes risks and instabilities caused by user changes such as installation of non-supported applications or inadvertent introduction of malware by employees. Granular policy controls can be enforced to disable USB devices, optical drives, and even networks to control data movement and further protect valuable corporate data and intellectual property. Consistent backup of corporate data to the datacenter driven by internal policies enforced on XenClient can also help organizations protect business-critical data. The self-service recovery capabilities in XenClient further ensure employee productivity while cost-effectively reducing helpdesk calls by allowing users to recover their full computing environments to any XenClient system without IT's involvement.

- **IT takes effective control of corporate assets. Give flexibility to mobile users.**

XenClient empowers IT with the ability to offer multiple virtual desktops with standard corporate images that will fit the needs of mobile employees with different roles. Consider a sales engineer who demonstrates software products in a virtual desktop and uses another virtual desktop for corporate communications—completely separated and protected. In addition to the flexibility offered, IT can rest assured that it is able to deliver a well-managed desktop that is securely locked down and isolated. In addition, corporate data is protected with consistent data protection policies that are automated without user intervention. Whatever the use, XenClient gives laptop users the ultimate in mobility and choice. It is a win-win for both IT and mobile users—IT gets full control while giving employee the flexibility they need to get their job done.

- **Simplify desktop management and disaster recovery for IT Pros**

XenClient enables IT professionals to easily create, deploy, move, secure, and protect standardized desktop images across any supported laptop device. IT can quickly deploy standard VMs to new employees or contractors with a centralized delivery platform for virtual desktops. Corporate data can be protected effectively by enforcing automatic and full-time backup of virtual desktops. Granular policy controls can be locally enforced on the virtual desktops to ensure effective management of corporate assets, including the ability to send “kill pills” to lost and stolen remote XenClient-enabled laptops.

- **Employees Work Any Way They Want.....And Have Some Fun Too**

End users can quickly discover the unlimited possibilities of using multiple virtual desktops on a single laptop. The ability to run multiple virtual desktops on a single laptop offers extreme portability and unprecedented user flexibility—so that employees have the freedom to work from anywhere, anytime—even when disconnected. Instead of carrying multiple devices each with a specific environment fulfilling a specific role, XenClient users can carry a single device with instant, simultaneous access to a variety of environments, such as a locked down business desktop, a personal desktop that the user can personalize, a test and development environment, a multi-machine sales demo, or a temporary computing environment for contractors/interns/partners. XenClient offers a high-quality video and graphics experience in a 3D-enabled virtual desktop, including full Windows Aero, OpenGL and DirectX support. Work and fun, no compromises!

- **Enable self-service disaster recovery for laptop users**

Whenever employees connect to the Internet, XenClient creates a secure connection to the datacenter to silently back up the system. In the event that a laptop is lost, stolen or fails, users can take advantage of the self-service restore capabilities of XenClient to restore the entire virtual desktop to another XenClient-enabled computer. The ability to pick a point in time backup also enables users to roll back changes and even restore test environments to their perfect state without the need to involve the helpdesk or IT team, which improves the time to recovery, decreases the load on IT, and gets end users back to work fast.

Key XenClient features

True bare-metal client hypervisor

Based on Xen virtualization technology, XenClient delivers true bare-metal performance with the highest levels of security and isolation to run multiple local virtual desktops simultaneously.

High-definition user experience

The first Type-1 virtualization solution designed for Intel Virtualization Technology for Directed I/O (Intel VT-d) provides direct access to the full capabilities of underlying graphics hardware and full Windows Aero, OpenGL and DirectX support for rich, high fidelity video and graphics in a 3D-enabled virtual desktop.

Simple user interface

With an easy-to-use GUI (Citrix Receiver for XenClient), users can easily create, manage and back up/recover virtual desktops locally, or connect to centralized resources to download predefined virtual desktops for speed and convenience. Users can seamlessly toggle from virtual desktop to virtual desktop and change hotkey switching.



Centralized management

Synchronizer for XenClient, a server-based central management application, provides a scalable platform to configure and deploy multiple local virtual desktops to users, including those in complex Active Directory trust environments. IT administrators can define policies to restrict the movement of corporate data, enable users with self-service recovery of backed up data, and issue “kill pills” to remotely disable virtual desktops on lost or stolen devices. Automatic connection throttling and USB/DVD pre-caching ensure speedy delivery of virtual desktops even over the slowest connections. User profile virtualization and layering technologies conserve resources by enabling the elective backup of user level data, settings and profiles; smart filtering technology removes non-relevant data from backup sets.

Data and user protection

Each virtual desktop image is fully encrypted with AES-XTS (256-bit encryption) and runs in complete isolation, ensuring that malware or cyber-attacks cannot pass between environments. IT admins can also require two-factor user authentication, enforce time-based VM lease periods for contingent staff such as contractors and interns, and set limits on data movement (USB, audio, optical, networking) for corporate policy enforcement.

Policy-based, automatic backup and recovery

Corporate and user data can be backed up over a secure connection (HTTPS) whenever the user is connected to the Internet. This automatic data protection feature ensures that valuable data is backed up in the datacenter and doesn't fall into the wrong hands.

Usage Scenarios

• Desktop virtualization for corporate laptops

Virtual desktops online/offline: For businesses considering virtual desktops, XenClient extends XenDesktop to the last mile of users who also need to work offline.

Control for IT: With XenClient, IT departments can feel confident in providing the flexibility their internal customers demand while effectively managing the laptops that are assigned to employees. XenClient enables fast deployment of new virtual desktops with standard desktop images to employees or contractors, securing corporate data with consistent and automatic backup policies that are enforceable on XenClient-powered laptops. For temporary staff including contractors, part-timers, and interns, IT can use XenClient to provide time-limited virtual desktops that expire automatically.

Rapid Recovery for Users: In addition to having multiple virtual desktops that enable employees to work, XenClient also provides self-service recovery to any XenClient device so that employees can empower themselves to get back their working environment faster in the event of malware destruction or to recover from data loss.

- **Consolidate multiple desktops to a single physical computer**

Employees with multiple roles and requirements: Employees in specific roles, including software development/testing/QA, system admins and IT pros typically need access to various environments. XenClient allows these users to easily setup, use and tear down virtual desktops that have their own OS.

Multi-system demos: Certain customer-facing employees need to demonstrate products and to do their own work, will require different virtual desktops.

Business and personal: For a majority of employees, the clear separation of business and personal environments prevents accidental introduction of malware to the corporate workspace as well as to avoid inadvertent exposure of corporate data to unintended audiences.

- **Multi-level secure desktop consolidation**

Environments with high security requirements: Certain Public Sector customers including Government, Military, and Security organizations require computing environments that have to be secure and isolated. XenClient XT is a version of the XenClient product family that provides multiple virtual desktops with extreme isolation and security, including multiple isolated networks per virtual desktop and multiple classification levels on the same system.

Why Choose XenClient

XenClient is a true Type-1 client hypervisor that delivers bare metal performance and secure isolation when allowing multiple virtual desktops to run locally on computers. Running directly on the hardware and without the need for an underlying host OS, XenClient provides better performance, stability, and security than other products.

- **High performance without compromises**

Unlike XenClient, legacy Type-2 virtual machine manager (VMM) products are incapable of providing the same level of benefits as XenClient offers due to the presence of an underlying host OS that separates it from the hardware layer. The basic architecture of Type-2 products requires additional processing power, memory, and storage resources due to the reliance on the host OS to translate VM requests down to the hardware layer.

XenClient is an infinitely better performing solution that will fit the needs of any organization without the complexities inherent in Type-2 products.

- **Highly secure with strict isolation**

Since Type-2 virtualization products sit on top of a host OS that separates it from the underlying hardware layer, the host OS is required to translate and pass virtual machine instructions and operations down to the hardware. As such, Type-2 products are less stable and susceptible to security weaknesses of the underlying OS.

Without the need for an underlying host OS, XenClient has significantly improved stability and security. XenClient's VMs are securely isolated. Any communication channels to the backend management server are fully encrypted and secure.



Key differentiation between XenClient (Type-1 hypervisor) and legacy products (Type-2 VMM)

	XenClient Type 1 Hypervisor	Legacy Type 2 Virtual Machine Manager
Supports multiple OS's in virtual desktops	Y	Y
Installs on existing PC hardware systems	Y	Y
Requires installed host OS		Y
High definition user experience	Y	
Direct hardware access	Y	
Low overhead virtualization layer	Y	
Supports complete system virtualization	Y	
Virtual machine secure isolation	Y	
Secure hypervisor boot	Y	

Summary

With XenClient, IT departments can easily roll out standardized corporate desktop images for better desktop management. IT can rest assured that XenClient-powered laptops and desktops can be seamlessly managed by setting enforceable data protection and data movement policies. Features such as lease policies for virtual desktops help IT to automatically enforce time-based access to corporate desktops for contingent staff. A remote “Kill Pill” policy feature further protects corporate data and intellectual property when laptops are lost or stolen by remotely locking it and making it unusable.

XenClient provides advanced endpoint security features for mobile users. Virtual desktops are securely isolated and maintained in encrypted files. User data and profile information can be securely backed up to the Synchronizer for XenClient, the backend management server in the datacenter. Communications between XenClient and the Synchronizer are encrypted to allow use over the public internet. Laptop users can recover their respective virtual desktops using self-service capabilities offered by XenClient to help improve user satisfaction and reduce helpdesk tickets.

XenClient offers new possibilities in virtual computing technology in terms of user flexibility with anywhere, anytime access to their virtual desktops. At the same time, XenClient Enterprise gives the IT administrator full control to help solve many key desktop management and mobility issues faced by IT departments today.



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About the Citrix solution

Citrix Systems, Inc. (NASDAQ:CTXS) is a leading provider of virtual computing solutions that help companies deliver IT as an on-demand service. Founded in 1989, Citrix combines virtualization, networking, and cloud computing technologies into a full portfolio of products that enable virtual workstyles for users and virtual datacenters for IT. More than 230,000 organizations worldwide rely on Citrix to help them build simpler and more cost-effective IT environments. Citrix partners with over 10,000 companies in more than 100 countries. Annual revenue in 2010 was \$1.87 billion.

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