



Thin Client Computing

Providing Solutions and Dispelling Myths

...thin clients have a longer operational life span, cut energy use and are less expensive to purchase and maintain.

Less is more

While minimalism in computing has been around since the 1990s, the concept only recently has hit its stride: Computer devices that only carry out essential applications, or “thin clients,” have a longer operational life span, cut energy use and are less expensive to purchase and maintain. As the phenomenon of software as a service gains traction, in fact, thin clients are already replacing desktop PCs in many government, commercial and educational settings.

A pioneer in thin client software innovation, Citrix Systems, Inc. specializes in providing virtualization solutions to government, healthcare and educational organizations that improve security, reduce IT expense and increase flexibility. When applied appropriately, Citrix applications can optimize the thin client to be a cost-effective solution for task-based workers, administrative staff or even mobile users—anywhere, on any device, all without losing application performance.

What does “thin client” mean?

The term “thin client”—also called a “slim” or “lean” client—is a computer that relies on a server to drive traditional computer tasks and therefore may not be equipped with standard hard drives, ports or installed software. As such, the thin client does not actually process data locally but rather acts merely as a user interface, while running programs and accessing data from the datacenter (conversely, the traditional “fat client” computer fulfills all roles by itself). The best analogy for this process would be residential satellite or cable TV service: A signal is sent from a centralized location, and the television set acts as a simple receiving device.

Thin clients require a network connection and are sometimes called network computers (NCs). In addition to a dedicated thin client device, users can also employ a normal PC with thin client software installed on it in order to send keyboard- and mouse-directed input to the server and get screen output back.



Myth #1 Putting thin client into place is labor intensive

The fact is, building a thin client system does not mean having to rebuild infrastructure in order to support it. The period required for full implementation can be relatively short, with the system actually eliminating management time and labor for the end user. What's more, when the time comes to introduce all-new desktops, users, applications and services, no changes are needed—merely set up thin clients once at the outset and then leverage them over and over. Thin clients also simplify overseeing networks since software issues only need to be addressed on one server as opposed to each individual machine.

Citrix XenApp™ offers one of the easiest ways to put a thin client system into place. XenApp is a Windows application delivery system that virtualizes, manages and delivers applications on-demand to office-based and mobile users anywhere from a secure central location. For quick and user-friendly product installation, role-based setup wizards and simplified server deployment ease the rollout of any size deployment and reduce installation time by up to 50 percent. XenApp also simplifies the creation or provisioning of virtual images, freeing up IT departments to focus more time and effort on strategic planning.

Citrix XenDesktop® also plays a central role in optimizing the thin-client experience for users. XenDesktop offers a desktop virtualization solution delivering 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.

...building a thin client system does not mean having to rebuild infrastructure in order to support it.

Myth #2 Thin client requires system upgrades and higher costs

While the need to upgrade is a common concern, in reality transitioning to a thin client arrangement does not mean you have to replace pre-existing equipment. Further, what changes that are made to an organization's devices can be done as part of a gradual evolution and not a large-scale overhaul. As for long-term cost savings, the clients can be made out of less expensive hardware than a standard fat client can—which cuts power consumption as well as the costs involved in adding on additional client terminals. The simple design of thin client computers involve no moving parts and are therefore low-maintenance and long-lasting, with little technical support needed during a typical lifespan.

The implementation of a thin client also streamlines an organization's disaster recovery plan when compared to the standard fat-client environment. In the event that a thin-client device goes down, it is simply replaced by another unit and it re-configures itself without the need for IT staff assistance. User preferences and settings reside in the datacenter so there is no need for tinkering with individual machines to restore them. A server-based system also is highly conducive to the growing popularity and implementation of teleworking programs.

Making the Case: A XenDesktop ROI Analysis

In this consideration, an organization has 1,000 desktops with 600 being considered for virtualization via hosted VM-based dedicated desktops (all thin clients).

Comparing the proposed costs and benefits of the Citrix XenDesktop solution vs. staying with current “As Is” opportunities, implementing a Citrix solution results in a projected TCO savings of \$869,874 over three years.

To implement the proposed project will require a three-year cumulative investment of \$846,606 including:

- \$549,000 in desktop infrastructure expenses
- \$216,000 in desktop infrastructure maintenance costs
- \$81,606 in server and storage power and cooling expenses

TCO Comparison: Three-year cumulative	Current (As Is)	Proposed w/ XenDesktop	Savings	
Desktop Infrastructure (Capital Expenditures)				
Desktop Infrastructure	\$463,320	\$549,000	(\$85,680)	-18%
Desktop Infrastructure Maintenance	\$0	\$216,000	(\$216,000)	0%
Desktop Infrastructure Management				
Desktop Administration	\$1,009,800	\$369,000	\$640,800	63%
Application Administration	\$295,920	\$70,200	\$225,720	76%
IT Planning and System Management	\$437,040	\$331,200	\$105,840	24%
Standard Utilities and Office Applications	\$397,800	\$324,000	\$73,800	19%
Custom Applications	\$414,000	\$338,400	\$75,600	18%
Power and Cooling	\$144,000	\$12,600	\$131,400	91%
Server and StoragePower and Cooling	\$0	\$81,606	(\$81,606)	0%
User Training	\$451,800	\$451,800	\$0	0%
Total Cost of Ownership (TCO) - 3 year cumulative	\$3,613,680	\$2,743,806	\$869,874	24%
Cost per Device per Year	\$2,008	\$1,524	\$484	24%
Total Direct Benefits	\$3,613,680	\$2,743,806	\$869,874	24%

Myth #3 Use of thin client can lead to compromised security

It is true that a thin-client server constitutes a single point of potential failure for its end users. However, there is distinctly more risk posed to a network that involves data and applications housed at widespread, multiple end points as opposed to one datacenter that can be more easily protected. As such, the option of separately securing every single computer in a network—sometimes numbering in the hundreds or thousands, or perhaps even more—is less preferable by comparison.

Even in the more traditional fat-client environment, access to e-mail and the Internet can be lost if the network fails. With a thin client, access to desktop applications are more reliable on a daily basis due to better datacenter

security and the ability to smoothly transition to a backup server in the event of an interruption. Its machines are far less vulnerable to viruses, worms and Trojan horses, and even physical device theft. With no data residing inside, a thin-client computer is largely useless when disconnected from the network.

With Citrix thin client, all data transmission is secured through high-performance, standards-based encryption from the datacenter through the network to the user. Access is controlled through a single point that ensures proper authentication for applications and data specific to their role. Application-level security is built in and provides compliance with government regulations and protection from outside attacks, while policy-based password management and session monitoring provide additional layers of protection for intellectual property and assets.

Myth #4 Loss of performance

In many cases, just the opposite happens—thin-client computing might even prove to be faster than the old network. Less powerful machines like thin clients can be used to easily run new and larger applications than ever before without losing efficiency. Their virtualized applications deliver a high-performance, high-definition user experience from any device, on any network—even for graphics-rich and multimedia content. Users are ensured a seamless experience with almost zero downtime and higher overall productivity.

Additionally, to simplify the question of which thin client devices align best with XenDesktop and XenApp, Citrix established the “Citrix Ready” framework. Citrix Ready is a verification program for partners to demonstrate interoperability between their products and Citrix products. The thin client category of Citrix Ready allows partners the option to test their devices to achieve basic Citrix Ready status or the more stringent “HDX Ready” status. These options are designed to address market needs based on end user segments and user experience requirements.

The HDX Ready designation is reserved for thin client devices that have been verified to work with all of the XenDesktop and XenApp HDX features. HDX (“High Definition User eXperience”) is a term to describe capabilities in XenDesktop that optimize the user experience when accessing hosted virtual desktops and applications. The HDX Ready category assists IT managers to easily identify thin client devices that deliver the best possible high definition user experience with XenDesktop and XenApp.

There is a tradeoff between a thin client’s cost and its capabilities. Not all users require the functionality of all of HDX features of XenDesktop or XenApp. Devices that are not deemed HDX Ready may still be useful for certain user types and use cases, generally at a lower price point than HDX Ready devices. The Citrix Ready thin client designation exists for those devices that support connectivity to XenDesktop or XenApp but only a subset of HDX functionality.

HDX (“High Definition User eXperience”) is a term to describe capabilities in XenDesktop that optimize the user experience when accessing hosted virtual desktops and applications.

Myth #5 Mobile devices will render thin client obsolete

While thin client computing isn't the answer for every end user, it remains that there will always be a wide range of stationary users in the workplace that can take advantage of its benefits. In addition, thin client technology can be adapted for use with mobile platforms including laptops, iPads, tablets and notebooks and offers a heightened level of protection from outside threats. The explosion of mobile computing has greatly increased exposure to viruses, data theft, unauthorized user access and device theft or loss —yet with thin-client computing absolutely no data is at risk since applications and data reside on the server.

...with thin-client computing absolutely no data is at risk since applications and data reside on the server.

Myth #6 IT-based concerns pose the biggest barrier to thin client use

Considering the ease of thin-client planning and implementation, the biggest obstacle to use is actually end-user resistance based on culture shock. Workers have developed a kind of emotional attachment to individual device control over time, yet once they become aware of the potential benefits of thin client their outlook tends to change. Misconceptions about convenience, access, security and flexibility often drive these attitudes, yet working in a thin-client environment actually affords more freedom and productivity than ever before. Changes in the computing landscape are more readily embraced when the advantages of that shift are evident.

Conclusion

Over time, the traditional system for deploying applications on multiple servers and user devices has grown ever more costly and open to security risks. By housing and processing data within a centralized server, thin client computing ensures that sensitive information is tightly monitored while reducing management expenses. Thin client also affords unprecedented flexibility and efficiency as well as an incremental approach to adopting a server-based system that allows standard devices to act like thin-client computers through the use of special software. Changes to infrastructure are limited and startup time is remarkably brief, and organizations can expect a lower cost of ownership going forward.

To learn more, please visit www.citrix.com

The **Citrix Delivery Center™** product family is composed of virtualization and networking product lines for an end-to-end system that virtualizes servers, applications and desktops, centralizes them in the datacenter and broadcasts them to users over any network as an on-demand service.

Citrix® XenDesktop™ is a desktop virtualization solution that delivers Windows desktops as an on-demand service to any user, anywhere.

Citrix® XenApp™ is an on-demand application delivery solution that enables applications to be centralized and managed in the datacenter and instantly delivered as a service to users anywhere.

Citrix® XenServer™ is an enterprise-ready, cloud-proven virtualization platform with all the capabilities needed to create and manage a virtual infrastructure at half the cost of other solutions.

Citrix® NetScaler®, available as a network device or as a virtualized appliance, makes web applications run 5x better by accelerating application performance, optimizing application availability, and enhancing web application security while substantially lowering costs.

Citrix® Access Gateway™ is a secure desktop and application access solution that provides administrators granular application-level control while empowering users with access from anywhere.

Citrix® Branch Repeater™ is a branch optimization solution that provides a high-definition desktop and application experience to branch and mobile users while dramatically reducing bandwidth costs and simplifying branch infrastructure.

Citrix Receiver™ is a high performance, universal client technology that enables on-demand delivery of virtual desktops, Windows, web and SaaS applications and IT services to any device.

About Citrix

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 2009 was \$1.61 billion.

©2011 Citrix Systems, Inc. All rights reserved. Citrix® is a trademark of Citrix Systems, Inc. and/or one or more of its subsidiaries, and may be registered in the United States Patent and Trademark Office and in other countries. All other trademarks and registered trademarks are property of their respective owners.