

# Citrix Systems

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**Abstract:** Citrix Systems, Inc. is an American multinational software company that supply server, application and desktop virtualization, networking, software as a service (SaaS), and cloud computing technologies. It was founded in Richardson, Texas in 1989 by a group of ex-IBM developers. The name Citrix is a combination of Unix and Citrus since its founder Ed Iacobucci moved the company from southern Florida to its new headquarters. Ed Iacobucci served as chairman until his departure in 2000.

Citrix solutions are based on virtualization and cloud computing technologies that can grant various benefits and great efficiency in CPU utilization, green IT environments with low power consumption, central control, more availability, reduces project timelines by eliminating hardware procurement, improves disaster recovery capabilities, more central control of the desktop, and improve outsourcing services.

**Keywords:** Citrix Systems, XenServer, Cloud Suite, NetScaler, Virtual Desktops.

## INTRODUCTION

There have been numerous prominent instances of security breaches and attacks. There is no indication of this relenting, embracing the need to consider security at the design phase, to constantly screen and go along to security threats and to get ready and bolster the environment in like manner. Security intricacy increments with the rise and utilization of more sorts of devices (cell phones, tablets, and web-empowered devices) and extra network systems, (for example, 3G/4G, Wi-Fi, and Bluetooth). Checking, recognizing and responding to security breaches is a critical test and essential to guarantee business coherence and security of assets.

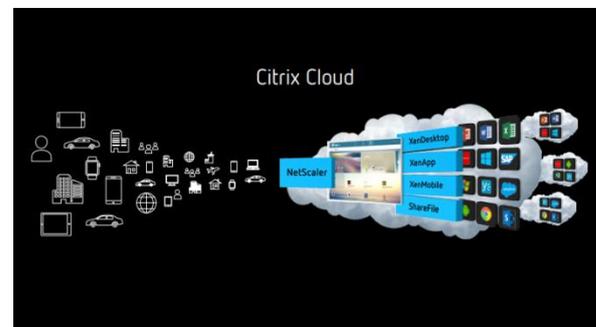


Figure 1: Citrix Cloud

Citrix offers solutions and licensing models for deployments managed and hosted by the customer, or deployments managed in the cloud.

Citrix products offer substantial security to ensure business continuity, and help organizations comply with security standards.

Citrix products offer an extensive variety of highlights and capacities to help secure applications and information inside Citrix XenApp and XenDesktop arrangements. These highlights and abilities are especially critical while conveying Citrix XenApp and XenDesktop in government, finance and health sector, where security is a basic thought and regularly a directed necessity.

## CITRIX HISTORY

Citrix Systems, Inc. is an overall pioneer in a specialty PC programming and administrations showcase. Citrix's first chairman, Edward E. Iacobucci, put it basically for Business Week: "We take any application, deliver it to any device, over any network through any bandwidth." Iacobucci established the organization and spearheaded the thin customer/server model. Citrix products incorporate Citrix ICA (Independent Computing Architecture), an authorized technology that upgrades server computing processing; MultiWin, a process that allows more than one user at a time to connect to the same centralized server software in separate sessions; the server software MetaFrame; the entry software systems Nfuse and XPS, and others. Citrix additionally offers preparing, upkeep, and bolster administrations to its clients around the world. Citrix clients incorporate 99 of the Fortune 100 organizations and 90 percent of the Fortune 500. Citrix offers its items and administrations in more than 60 nations. Roughly 50% of the organization's income is produced outside the United States.



## CITRIX PRODUCTS

Citrix product portfolio consists of many products and all these products can be quite great. It may be hard to understand the functions of all these products and their relationship with each other.<sup>1</sup>

- |                  |                |                 |
|------------------|----------------|-----------------|
| I. XenApp        | II. XenDesktop | III. XenServer  |
| IV. StoreFront   | V. NetScaler   | VI. XenMobile   |
| VII. GoToMeeting | VIII. GoToMyPC | IX. Cloud Suite |
| X. Podio         | XI. ShareFile  | XII.            |

## CITRIX DEPLOYMENT MODELS

### I. XenApp

XenApp is the industry's leading solution for application and desktop delivery, with over 100 million users worldwide. XenApp enables secure, remote access to Windows applications and server desktops from any device, over any network. Applications and desktops are secured in the data center to protect sensitive information and enhance corporate security. XenApp now enables employees to access Linux virtual desktops side-by-side with Windows resources for a complete workspace experience.<sup>2</sup>

Citrix XenApp is a product that broadens Microsoft Remote Desktop Session Host work area sessions and applications to clients through the Citrix HDX protocol. XenApp and Remote Desktop Services enable IT divisions to halfway oversee Windows applications and processing assets in a protected data server. Clients can get to the Citrix XenApp applications from anyplace and from non-Windows PCs.

Citrix XenApp previous editions were with the names MetaFrame, MetaFrame XP, MetaFrame Presentation Server and Presentation Server. MetaFrame was propelled to the market in 1998; its forerunner, WinFrame, was reported in 1995. The item got its present name in 2008 after Citrix's obtaining of XenSource.

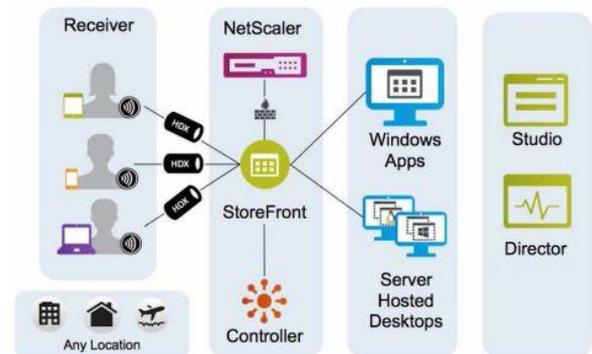


Figure 2: XenApp System layout

Presently, there are different Citrix XenApp versions accessible, each with various highlights and costs. Release names incorporate Citrix XenApp Fundamentals, XenApp Advanced, XenApp Enterprise and XenApp Platinum.

### II. XenDesktop

Citrix XenDesktop can be considered as a new product and is a desktop virtualization solution. Desktop virtualization is the practice of hosting a desktop operating system within a virtual machine (VM) running on a centralized administration server. A user can connect to the desktop from any remote location by using presentation virtualization. To achieve this, Citrix uses their proprietary presentation layer protocol called Independent Computing Architecture (ICA). Citrix XenDesktop is a hypervisor-independent product that runs on Citrix XenServer, VMware, vSphere and Microsoft Hyper-V. A central desktop virtual machine can be used by only one user through desktop virtualization. Citrix positions Citrix XenDesktop as a desktop delivery solution.



Figure 3: XenDesktop System layout

XenDesktop enables secure, remote access to Windows applications and desktops from any device, over any network. With industry-leading XenApp built in, XenDesktop delivers full desktops or individual apps to any device. It also enables employees to access Linux virtual desktops simultaneously with their Windows resources for a complete workspace experience.

<sup>1</sup> [Understanding the Citrix product portfolio](#)

<sup>2</sup> [www.citrix.com/about/](http://www.citrix.com/about/)



### III. XenServer

Citrix XenServer is an open source server virtualization platform based on the Xenhypervisor. Citrix also offers a supported version that can be purchased, with two options: Standard and Enterprise.

This platform is used by virtualization administrators to deploy, host and manage VMs. It's also used to distribute hardware resources to VMs.

XenCenter provides all the virtual machine management, monitoring and general administration and its functions in one single interface. System administrators can easily manage hundreds of virtual machines from a centralized management console that can be installed on any Windows desktop. The flexible distributed management architecture in XenServer divides server management data across the servers in a resource group to ensure that there is no single point of failure. Role-based administration improves security and enables deputed access, control, and usage of XenServer groups by maintaining a gradual access structure with varying levels of permissions. Receive immediate notification with historical reporting of VM performance to enable fast recognition and diagnosis of fault or failure in the virtual infrastructure.<sup>3</sup>

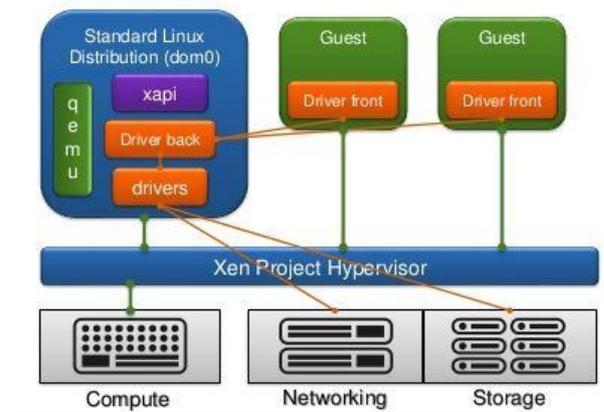


Figure 4: Xen Project Hypervisor

### IV. Storefront

Citrix StoreFront is an enterprise app store that improves security and facilitates deployment, delivering new user experience across Citrix Receiver on any platform. StoreFront makes it easy to manage multi-site XenApp and XenDesktop environments. It allows institutes to customize deployments to meet specific business needs. StoreFront also enables users to work from anywhere, any device.

StoreFront enables IT administrators to provide users with central access to their virtual desktops. StoreFront interacts with the Citrix Receiver client software to support access to XenDesktop and XenApp servers from Windows, Mac, Apple iOS, Google Android, Linux...etc. Citrix's enterprise app store includes single sign-on access to apps and desktops using the company's NetScaler. StoreFront also contains security features such as smart card authentication and extensible authentication. StoreFront includes a software developer's kit that allows administrators to customize user display and app deployment, such as loading important works applications upon login. Administrators can use the Citrix Studio console to centrally manage StoreFront servers.<sup>4</sup>

### V. Netscaler

Citrix NetScaler is an entire web application conveyance controller that influences applications to keep running up to five times speedier and ensures that applications are constantly accessible with its application stack adjusting abilities. In the year 2012, there were in excess of 10,000,000 sites NetScalers. Microsoft, CNET, eBay, and MasterCard are among the busiest sites utilizing Citrix NetScaler. It is sent in different systems around the world to streamline, secure and control the conveyance of all cloud and enterprise services to boost the end client encounter for all clients including mobile clients. NetScalers are accessible as a physical apparatus or programming machine and highlight a prepaid software model that has been extremely prevalent according to customers' needs.

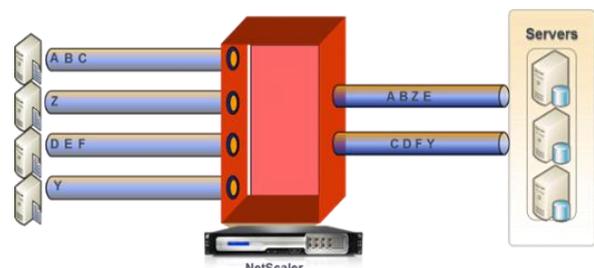


Figure 5: NetScaler role in Citrix Services

Today, Citrix NetScaler can have upwards of 115 virtual Application Delivery Controllers running inside one physical machine. NetScaler's are accessible in either an equipment or software-based machine. Equipment choices incorporate single and different machines. NetScaler's are FIPS agreeable and high SSL machines. software-based choices incorporate virtual hypervisor-based and containerized miniaturized scale benefit offerings.

### VI. Xenmobile

<sup>3</sup> [XenServer Features](#)

<sup>4</sup> [www.citrix.com](http://www.citrix.com)



Citrix XenMobile is a venture mobility management software suite that provides administrators with mobile device management, mobile application management, and online file-sharing abilities. XenMobile is among today's top choices for enterprise mobility management. In comparison to other enterprise mobility management products on the market, Citrix has invested most heavily in conjectural usability and user experience, driving towards improved levels of productivity. The product is now in version 10 (as of this writing, version 10.3 is the shipping version). XenMobile is available as both a cloud service and an on-premises software package. XenMobile focuses on making corporate resources available on different devices to satisfy user demands and make workers more productive. Since Citrix migration with Microsoft, XenMobile's integration with Exchange is exemplary, and while ShareFile acts as the backbone of much of the Worx tools, it is not forced upon users for file sharing. On the pure aspects of enterprise mobility management, XenMobile is an excellent solution.<sup>5</sup>

## VII. GoToMeeting

GoToMeeting is a web-hosted service made and showcased by LogMeIn. It is a web-based meeting, work area sharing, and video conferencing software that empowers the client to meet with other PC clients, clients, customers or associates by means of the Internet continuously. In late 2015, Citrix reported plans to turn off the GoToMeeting business as a remain solitary backup with a market an incentive around \$4 billion. In July 2016, Citrix and LogMeIn declared plans to consolidate the GoToMeeting group of items.

Citrix GoToMeeting is a subscription-based web video-conferencing and collaboration service that you can use to host an unlimited number of online meetings for up to 25 attendees for the business of any size and type (where the 25-attendees limit is suitable). GoToMeeting offers familiar videoconferencing features, such as the ability to view the host's desktop and run applications in real time.<sup>6</sup>

## VIII. GoToMyPC

GoToMyPC is a hosted service that empowers secure program based access to any Internet-associated Microsoft Windows-based PC. Highlights incorporate a screen-sharing Viewer, simplified File Transfer, Remote Printing, Guest Invite, and Chat. Corporate administrators approach the broad administration and announcing apparatuses that empower central control over this remote-access to administrations. Dissimilar to different solutions, GoToMyPC does not require perpetual customer software or a system change. This approach altogether decreases IT support prerequisites, bringing about lower add up to cost of usage. It can be propelled from any program with an Internet association, empowers intelligent access to any desktop application. The File Transfer include sends and gets files, directories and folders. It underpins content to talk amongst customer and host clients, which is valuable and enable helpdesk to access remote PCs. It utilizes Remote Printing allows licenses printing to a client printer from the host PC.

GoToMyPC empowers secure remote access rapidly, consistently and easily. Other virtual private networks (VPN) arrangements endeavor to duplicate an employee's office desktop on a home PC or workstation by tying remote hosts to the corporate LAN over IPsec or SSL channels. GoToMyPC uses a specialist's current office desktop by giving secure client to-PC access. With screen sharing and adequate transmission capacity, representatives can have the very same desktop condition, in the case of working at the workplace, at home or outside.

GoToMyPC is a very attractive solution for individual desktop remote access by trusted "corporate insiders." This service is well suited for extended use by broadband-enabled remote workers and visiting workers with LAN access. Mobile workers limited to Internet dial-up can also use GoToMyPC for effective short-term access to PCs on the corporate network.<sup>7</sup>

## IX. Cloud Suite

Citrix Cloud is a workspace management platform for IT administrators to design, deliver and manage virtual desktops and applications and other services, such as file sharing. Citrix Cloud services simplify the delivery and management of Citrix technologies extending existing on-premises software deployments and creating hybrid workspace services.

Citrix first announced its Citrix Workspace Cloud service in May 2015. Citrix rebranded it as Citrix Cloud in May 2016, offering these main components: XenApp and XenDesktop Service, ShareFile and XenMobile Service.<sup>8</sup>

<sup>5</sup> [www.citrix.com/products/xenmobile/](http://www.citrix.com/products/xenmobile/)

<sup>6</sup> <https://en.wikipedia.org/wiki/GoToMeeting>

<sup>7</sup> [www.gotomypc.com](http://www.gotomypc.com)

<sup>8</sup> <http://searchvirtualdesktop.techtarget.com/definition/Citrix-workspace-Cloud>



Citrix Cloud includes Smart Tools to help with lifecycle management, automated resource deployment and migration to the latest versions of XenApp and XenDesktop. In addition, Smart Tools monitor an organization's XenApp and XenDesktop deployments for problems and resolves them when they arise.

#### **X. Podio**

Podio is an online adjustable work and project administration software. It permits clients one central place for groups to arrange, impart and complete work. It depends on workspace idea, where individuals can oversee projects with more productive participation instruments. It offers answers for unmanageable messages, unstructured records, and separated frameworks. Rather, clients can talk progressively, append, store and offer documents effortlessly with others with regards to work, get moment work status and reports, all utilizing one application. Also, it is anything but difficult to redo the arrangement with simple drag-and-drop.

#### **XI. ShareFile**

ShareFile is a cloud-based file sharing service that empowers clients to effectively and safely send and receive files and documents.

ShareFile empowers clients to send extensive reports by email, safely handle record exchanges, and access a coordinated effort space from desktops or cell phones. ShareFile furnishes clients with an assortment of approaches to work, including an online interface, portable customers, desktop instruments, and coordination with Microsoft Outlook.

ShareFile is offered under several business plans. ShareFile Enterprise provides enterprise-class service and includes Storage Zones Controller and the User Management Tool.<sup>9</sup>

### **CITRIX SOLUTIONS PROS**

Today's IT-intensive enterprise must always be on the lookout for the latest technologies that allow businesses to run with fewer resources while providing the infrastructure to meet today and future customer needs.

#### **▪ SERVER CONSOLIDATION**

It is not unusual to achieve 10:1 virtual to physical machine consolidation. This means that ten server applications can be run on a single machine that had required many physical computers to provide the unique operating system and technical specification environments in order to operate. Server utilization is optimized and legacy software can maintain old OS configurations while new applications are running in VMs with updated platforms.

Although a server supporting many VMs will probably have more memory, CPUs, and other hardware it will use little or no more power and occupy the same physical space reducing utility costs and real estate expenditures.

#### **▪ TESTING AND DEVELOPMENT**

Use of Citrix solutions enables rapid deployment by isolating the application in a known and controlled environment. Unknown factors such as mixed libraries caused by numerous installs can be eliminated. Severe crashes that required hours of reinstallation now take moments by simply copying a virtual image.

#### **▪ DYNAMIC LOAD BALANCING AND DISASTER RECOVERY**

As server workloads vary, Citrix solutions provide the ability for virtual machines that are over utilizing the resources of a server to be moved to underutilized servers. This dynamic load balancing creates efficient utilization of server resources.

Disaster recovery is a critical component for IT, as system crashes can create huge economic losses. Citrix solutions enable a virtual image on a machine to be instantly re-imaged on another server if a machine failure occurs.

#### **▪ VIRTUAL DESKTOPS**

Multinational flexibility provides seamless transitions between different operating systems on a single machine reducing desktop footprint and hardware expenditure.

#### **▪ IMPROVED SYSTEM RELIABILITY AND SECURITY**

Citrix systems help prevent system crashes due to memory corruption caused by software like device drivers. VT-d for Directed I/O Architecture provides methods to better control system devices by defining the architecture for DMA and interrupt remapping to ensure improved isolation of I/O resources for greater reliability, security, and availability.

<sup>9</sup> <https://docs.citrix.com/en-us/sharefile/about-sharefile.html>

**CITRIX SOLUTIONS CONS****▪ COST**

The upfront cost can be much higher and, depending on how high of an availability you want, you will need to be willing to design the system for your needs now and in the future.

**▪ COMPLEXITY**

If you are not familiar with the hardware and network aspects of the whole setup, it can be a daunting task to figure out. Routing rules and VLAN's continue to add complexity, especially if security is a concern.

**▪ OFTEN THE HARDWARE IS BUNDLED TOGETHER**

In one location making a single disaster more likely to cause significant downtime. However, there are ways around this.

**▪ HARDWARE KEYS**

Yes, you can use hardware keys. You can bind a USB port to a specific virtual machine. However, you are not able to move the virtual machine without physically moving the key as well.

**▪ ADD-ON HARDWARE**

In the past, you were not able to add on older PCI hardware and share it with the virtual machine. This has changed, but it does not work 100% of the time. I would recommend testing it thoroughly before deploying. Of course, this also limits which machine a virtual machine can run on because it will need to be bound to that piece of hardware.

**CONCLUSION**

This paper presented essential terms related to Citrix solutions and products with the aim to answer questions frequently asked by people who are in the IT field. These terms included its Introduction, definition, characteristics, types, deployment models and finally pros and cons.

This paper explains technology that Citrix products are based upon, and how premises and users can use them through many applications and terms of technology. Citrix provides Workspace Services based on Application Virtualization and virtual desktop infrastructure, and other products that have been discussed previously in details.

Citrix provides various ways for customers to receive upgrades, support, and maintenance for products, which include Software Maintenance, Subscription Advantage, Technical Support Services and Hardware Maintenance. Subscription Advantage provides customers access to the product version updates when made available during their membership term, Citrix professional services include Citrix Consulting, and Product Training and Certification.

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