

White paper



# Evolving your XenApp and Presentation Server Infrastructure

A disaster recovery and business continuity solution



# Table of contents

Introduction

There's more to business continuity than meets the eye

What constitutes availability? .....	3
What constitutes accessibility? .....	4

A comprehensive solution for business continuity

The role of XenApp .....	4
Global Server Load Balancing .....	4
Secure remote access .....	5

The benefits of the Citrix approach

Conclusion

# Introduction

Disaster recovery planning and the broader objective of ensuring business continuity are hot-button topics for organizations worldwide. To understand why, one need only consider the frequency and variety of “events” that have occurred in recent years. Natural disasters (e.g., hurricanes, tsunamis, cyclones, earthquakes, and wildfires), man-made calamities (e.g., terrorist attacks, civil unrest/war), potential health crises (e.g., influenza outbreaks), and a wide range of less-severe or -dramatic disturbances are constantly in the headlines. The threats are real. And so is the impact that they can have on a company’s bottom line.

To be perfectly clear, organizations that are tackling this topic will be served best by following a rigorous, if not formal, process. Numerous factors will need to be evaluated and, ultimately, an extensive collection of procedural and technological elements will need to be put in place to achieve a comprehensive solution. One of the most critical components will be enabling users of all types to access the applications they need to fulfill their work responsibilities. In this regard, IT shops running Citrix XenApp™ (formerly Citrix Presentation Server™) have a considerable head start. They already have the means to effectively and efficiently deliver a wide variety of applications to displaced or home-bound users without worrying about the nature of the client devices being used or resorting to pre-deployment of client software.

It is important to realize, however, that XenApp alone is not really sufficient. For instance, what if the datacenter where the XenApp server farm is running is impacted by an event? And what about the security implications of delivering confidential application data to displaced users who are now working in situations involving untrusted devices or networks?

This paper will explore the challenges of maintaining the availability and security of applications during disasters and disruptions in order to distill the characteristics of an ideal solution. It will subsequently reveal how global server load balancing and secure remote access capabilities available from Citrix, particularly in the form of Citrix® NetScaler®, are a complementary, logical extension to XenApp. As will be illustrated, the result is a robust solution that ensures application availability and conveys a wide range of technical and business benefits.

# There’s more to business continuity than meets the eye

In the event of a true disaster, it’s crucial to keep in mind that the safety and well-being of the people involved always comes first. Only after that facet of a situation has been thoroughly addressed — or in the case of an event that is classified as something less than a disaster, such as an episode of bad weather or the loss of connectivity to a datacenter — is it then appropriate to focus not only on sustaining business operations, but also on maintaining them as close as possible to normal. Given the dependency of today’s organizations on information technology, a big part of meeting this objective will entail ensuring that users continue to have access to critical applications. On the surface, this breaks down into a two-part problem:

- (1) ensuring that essential applications are available; and
- (2) ensuring that they are secure and accessible, i.e., that users can in fact get to them.

Upon closer inspection, however, it becomes clear that each part of the problem actually has a number of individual facets that require consideration.

## What constitutes availability?

When it comes to application availability, having separate instances at multiple datacenters and being able to seamlessly and intelligently fail over between them is an obvious starting point. In this context, “seamlessly” is intended to convey that there should be no noticeable interruption or difference to the users, as well as no need for intervention by operators at the time the event occurs. Of course, your administrators will still need to configure everything to begin with, but from that point forward any transitions should take place automatically. Furthermore, failing over “intelligently” means that it happens not just if the application itself is down, but also when any other component along the end-to-end path is not functioning properly — for instance, if an intermediate router, local authentication server, or network link were to fail.

Two additional capabilities to consider pertain to performance and persistence. For the former, the point is that not all “failures” are black and white. More specifically, poor performance should also be regarded as a type of failure. An ideal solution, therefore,

should be able to account for scenarios where the user is being subjected to slow response times — for instance, due to network congestion, so-called “flash” periods of activity, or any other of a myriad of possible reasons. In fact, the solution should even account for relative slowness, as opposed to a complete interruption, perhaps due to proximity (or lack thereof) of the user to a given site. The point is that if a better experience can be achieved by using a different instance/site that is also available, then that should be taken advantage of, and, once again, it should be done in a completely seamless manner.

Finally, persistence is a derivative requirement that comes along with the ability for users to be vectored to alternate sites. It also ties back to the concept of being seamless. Specifically, the goal of persistence is to ensure that disrupted sessions or users involved with multi-step transactions are consistently returned to the instance/site where they originally connected. This way the frustration of having to “start over” or otherwise deal with incomplete data can simply be avoided.

## What constitutes accessibility?

The accessibility dimension of the business continuity problem is also more involved than one might initially think. Once again, it’s important to remember the people. It’s not enough to just say, “We have one or more alternate sites to ensure app availability in the event that a datacenter goes down for some reason.” After all, how will employees located at the downed site continue to work? Alternately, let’s say the event is not a full-blown disaster. In fact, it doesn’t even take out any of your datacenters. But it does keep your employees from getting into the office (e.g., a snowstorm). What then?

The point is that a truly effective solution for business continuity must account not just for disruptions to your application infrastructure, but also for disruptions to the people who use the infrastructure! Fundamentally, this means that to be considered complete, a solution must support secure remote access. Moreover, it needs to do so:

- for a population of users that normally operates locally — in other words, you can’t count on them already having corporate-issued laptops, complete with a pre-configured remote access capability and appropriate security software;
- regardless of where the users are located and what sort of network connectivity they have; and,
- for all types of applications — not just Windows® but Web-based and client-server applications too.

# A comprehensive solution for business continuity

Citrix fully recognizes that the ability to thoroughly and efficiently maintain secure application accessibility is a central component of a comprehensive strategy for disaster recovery and business continuity. Indeed, this is why we recommend that our XenApp customers also consider implementing global server load balancing and secure remote access, ideally in the form of the NetScaler platform, which conveniently incorporates both of these capabilities.

## The role of XenApp

The thousands of enterprises worldwide that use XenApp are already familiar with its strengths. Many of you also realize that its capabilities are a good fit not just under normal operating conditions, but also for disaster recovery and business continuity scenarios. Suffice it to say, XenApp reliably delivers applications of all types, and it does so without regard for user location and type of device or network connection. Any PC can immediately become an operational workstation simply by virtue of having an Internet browser, or with the dynamic download and installation of the Citrix client software. Furthermore, based on its virtualization technology and the many refinements XenApp has received over the years, performance will not be an issue even for slow network links and/or “heavy” applications.

However, none of these capabilities really matter if a disaster or disruption renders an organization’s XenApp infrastructure inaccessible or inoperable. Once again, this is why enterprises should include establishing global high availability and secure remote access to their XenApp environment as a high-priority objective of their overall business continuity strategy.

## Global Server Load Balancing

As previously discussed, in the case of an event that disrupts one datacenter, enterprises need the ability to seamlessly redirect users to a XenApp implementation at an alternate site. Furthermore, the solution must be intelligent enough to discern the impact of issues — including both failures and performance degradations — not just to entire sites, but also to any of the individual components and many of the services upon which a user’s session depends.

Fortunately, all of these requirements can be fully met by the Global Server Load Balancing (GSLB) capability that is an integral feature of Citrix NetScaler. This feature is based on the ability of NetScaler to act as an authoritative DNS server and, therefore, to provide users with the IP address corresponding to whichever site it decides is best.

When all sites are operating normally, users will be directed to their default site, as configured by the system/network administrators. However, if that site becomes unavailable or is determined to be overloaded — based on a wide range of configurable parameters — then users are automatically directed to an alternate XenApp site without having to alter their behavior in any way. The GSLB service accomplishes this first by checking the availability and health of any Citrix Access Gateway appliances that are present (see next section), as well as the Web Interface and XML Broker components of XenApp. If any of these elements is unresponsive, NetScaler classifies the site as “down” and redirects user sessions accordingly.

The second part of the GSLB services entails using advanced health checks and policies to assess numerous factors — including application response time, application load, packet rates, available SNMP metrics, and even the user’s geographic location — and then route users to the datacenter that will provide them with the best service. In this way, enterprises can maximize their datacenter investments even under routine operating conditions.

The net result with NetScaler GSLB is greater assurance of both (a) the availability of your XenApp infrastructure and the applications it delivers, and (b) the quality of the application experience your users will receive.

Constellation Brands, a \$6.5 billion international producer and marketer of alcoholic beverage brands, first implemented Citrix Presentation Server™ (now XenApp) in 2001 to address its application delivery needs. John Dorak, Director of Infrastructure Services later recognized the value of adding NetScaler and its global server load balancing capabilities, especially considering his need to support nearly 10,000 users in 70 locations. “We acquired NetScaler with an eye towards building a failover disaster recovery site.” The intent is to have both XenApp and NetScaler play a key role in this initiative, Dorak explained. “I can put additional NetScaler appliances in a failover center ... I will have a subset of the XenApp server farm for JD Edwards, and if this datacenter goes down, my users will just sign on to that farm and continue to work.”

## Secure remote access

The second extension of XenApp that makes sense for disaster recovery and business continuity purposes is the ability to support secure remote access. Inevitably, some users that do not typically operate remotely will find themselves displaced from their normal work environment. Consequently, they’ll have to make do with whatever computing devices and network connections they have at home, or that they are otherwise able to cobble together. One obvious concern in such a situation is ensuring the confidentiality and integrity of ensuing application sessions and any sensitive information that is accessed. Thus, even though XenApp can easily deliver the applications these users require to fulfill their responsibilities, there is still a need to provide robust security ... without having to pre-install any client software, which would be impractical or impossible in a disaster situation.

This is where Citrix Access Gateway™ fits in. Classified as an SSL VPN, Access Gateway enables remote users to connect to XenApp, as well as to other resources, via an easy-to-use Web client. Upon being dynamically downloaded and installed, the client provides a rich, desk-like experience all wrapped up in a standards-based, SSL/TLS encrypted session. Integrated end-point scanning helps ensure that user devices are safe for connection to the corporate network and a persistence feature seamlessly reconnects users in the event of intermittent connectivity. In addition, fine-grained access control is rendered by the included SmartAccess and SmoothRoaming capabilities, which:

- (a) determine the level of user access based on administrator-defined rules and end-point analysis;
- (b) control not just what data can be accessed, but what actions the user can perform — such as print, save, launch, and view; and
- (c) adapt access policies accordingly as users move between locations and/or devices.

Simply put, by providing a flexible and robust set of security capabilities that can be dynamically engaged, Access Gateway enhances existing XenApp installations and further increases their suitability for business continuity scenarios. In addition, Access Gateway functionality is available as an integrated component of the Enterprise and Platinum Editions of the NetScaler platform. The integration of Access Gateway and global server load balancing functionality in NetScaler is particularly attractive for enterprises seeking to simplify management and ease network device sprawl.

# The benefits of the Citrix approach

And speaking of things that enterprises will find attractive, the combination of XenApp, NetScaler GSLB and Access Gateway yields a wide range of other benefits. Indeed, from a technological perspective, these include the following:

- Global high availability — key application infrastructure will remain in service even during events that take an entire data center offline.
- Reduced complexity — the NetScaler platform integrates GSLB, secure remote access, and numerous other capabilities in a single, easy to manage device.
- Scalability and performance — the load-balancing, content-switching, and acceleration capabilities that come along with the NetScaler platform optimize the performance and enable greater scalability of existing application infrastructure. In conjunction with XenApp, these features also ensure high performance is achieved from the point of view of the end user.

Considering matters from a business perspective, the benefits of extending XenApp with NetScaler also include the following:

- Resiliency — having robust application infrastructure helps ensure that critical business functions can be accomplished on a non-stop basis and that user productivity is not impeded.
- Broad applicability — while the solution excels during disruptions and disasters, it also delivers an optimized user experience and support for mobile employees under normal operating conditions.
- Consistency — by enabling XenApp to be used in all scenarios, not just during normal operations, users are provided with one familiar way of operating (as opposed to having to learn multiple methods for connecting to and interfacing with key applications).
- Agility and adaptability — a rich and flexible feature set provides the ability to easily and rapidly accommodate to changes in business plans, objectives, and strategies, not to mention the ability to withstand the test of time.
- Compliance — the robust features of Access Gateway, including its granular access control and logging capabilities, help ensure enterprises stay compliant with prevailing regulatory requirements, even when they have to operate in an atypical manner due to a disaster.

- Efficiency — several essential capabilities can be deployed with minimal additional hardware/devices and at a reasonable cost. Furthermore, the products involved are part of a broader, comprehensive portfolio of application delivery solutions. Thus, as desired, enterprises can continue to enhance their application delivery infrastructure without having to establish and manage relationships with a host of additional vendors.

## Conclusion

Modern enterprises need to account for potential disaster scenarios as well as the wide range of more common events — such as bad weather or major outbreaks of influenza — that can impact the availability or accessibility of their application infrastructure. In this regard, XenApp certainly has a role to play. After all, it efficiently delivers applications to all types of users and devices over all types of network connections. But what about XenApp itself? How will its availability and accessibility be guaranteed so that business operations will be able to continue with minimal impact? Fortunately, there's a straightforward, two-part answer: (1) by implementing Global Server Load Balancing to provide robust fault tolerance and an optimized user experience, and (2) by implementing Citrix Access Gateway as a means for achieving secure remote access to your XenApp server farms. Moreover, with Citrix NetScaler, enterprises can implement both of these crucial capabilities via the deployment of a single, integrated platform.

# Additional References

For further assistance on this topic, please refer to the following resources, or contact your local Citrix representative.

## NetScaler for XenApp Implementation Guide

To learn more about adding GSLB to your current Citrix infrastructure, read this guide.

[www.citrix.com/%2Fsite%2Fresources%2Fdynamic%2Fsalesdocs%2FNsforXAIimplementationGuide%2Epdf](http://www.citrix.com/%2Fsite%2Fresources%2Fdynamic%2Fsalesdocs%2FNsforXAIimplementationGuide%2Epdf)

## NetScaler for XenApp Reference Architecture

To learn more about how features like server load balancing and global server load balancing can improve an enterprise implementation of XenApp and Access Gateway, read this guide.

[www.citrix.com/%2Fsite%2Fresources%2Fdynamic%2Fsalesdocs%2FNsforXAResearchArchitecture%2Epdf](http://www.citrix.com/%2Fsite%2Fresources%2Fdynamic%2Fsalesdocs%2FNsforXAResearchArchitecture%2Epdf)

## Case Study, Constellation Brands

To learn more about how Constellation Brands is using Citrix to deliver an enterprise application worldwide and optimize its Web site applications for consumers and retailers, read the full case study.

<http://www.citrix.com/English/aboutCitrix/caseStudies/caseStudy.asp?storyID=658551>

## Citrix Worldwide

### Worldwide headquarters

Citrix Systems, Inc.  
851 West Cypress Creek Road  
Fort Lauderdale, FL 33309  
USA  
T +1 800 393 1888  
T +1 954 267 3000

### Regional headquarters

#### Americas

Citrix Silicon Valley  
4988 Great America Parkway  
Santa Clara, CA 95054  
USA  
T +1 408 790 8000

#### Europe

Citrix Systems International GmbH  
Rheinweg 9  
8200 Schaffhausen  
Switzerland  
T +41 52 635 7700

#### Asia Pacific

Citrix Systems Hong Kong Ltd.  
Suite 3201, 32nd Floor  
One International Finance Centre  
1 Harbour View Street  
Central  
Hong Kong  
T +852 2100 5000

#### Citrix Online division

6500 Hollister Avenue  
Goleta, CA 93117  
USA  
T +1 805 690 6400

[www.citrix.com](http://www.citrix.com)

### About Citrix

Citrix Systems, Inc. (Nasdaq:CTXS) is the global leader and the most trusted name in application delivery infrastructure. More than 200,000 organizations worldwide rely on Citrix to deliver any application to users anywhere with the best performance, highest security and lowest cost. Citrix customers include 100% of the *Fortune* 100 companies and 99% of the *Fortune* Global 500, as well as hundreds of thousands of small businesses and prosumers. Citrix has approximately 6,200 channel and alliance partners in more than 100 countries. Annual revenue in 2007 was \$1.4 billion.

©2008 Citrix Systems, Inc. All rights reserved. Citrix®, Citrix XenApp™, Citrix® NetScaler® and Citrix Access Gateway™ are trademarks 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. Microsoft® and Windows® are registered trademarks of Microsoft Corporation in the U.S. and/or other countries. All other trademarks and registered trademarks are property of their respective owners.

0308/PDF

