



Ensuring secure remote access and global high-availability for Presentation Server in a DR/BC scenario



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Introduction

To ensure that businesses can continue to operate in the event of a network outage, enterprises must enable users to continue to access business-critical application services. Specifically, IT organizations are tasked with ensuring:

1. that critical client/server and Web applications remain available
2. that these applications can be delivered to displaced users with as little change to behavior as possible
3. that access to these applications remains secure, regardless of what network or device is used

When business operations are disrupted, users may no longer have access to their office desktops. Office workers can in effect become remote workers who need remote access to enterprise applications. The challenge for IT organizations is to efficiently deliver Web, Windows®-based and client/server applications to users. Of the three, Web applications pose less of a challenge, since most computers have a Web browser pre-installed. Windows-based and client/server applications are more problematic, since they may be customized and specific to the user, and not likely to be pre-installed as standard software on PCs. Shipping software to users or asking them to download and install software is impractical and inefficient. Moreover, many client/server applications simply are not optimized for access over a WAN.

For these reasons, enterprises need to be able to virtualize and stream applications to users on a granular basis as part of their disaster recovery/business continuity (DR/BC) plan, and guarantee a level of application performance that enables users to be productive.

Ensuring business continuity with Citrix

Citrix Presentation Server™ is trusted by many of the world's largest enterprises to provide Web-based access to essential Web, Windows-based and client/server business resources. In a DR/BC scenario, Presentation Server allows users to work from anywhere, using any device, over any network connection. Citrix Presentation Server differentiates applications, their format and their users, and does not require that these factors be in the same geographical location. This special feature greatly facilitates staff relocation, as any PC can immediately become an operational workstation. A simple Internet browser or the installation of the Citrix client software is all that is required to essentially create a universal client device. However, to ensure that users can access Presentation Server-delivered applications in the first place, enterprises must also architect secure remote access to, and global high availability of, Presentation Server-delivered applications into their DR/BC plan.

Secure remote access

Security — of property, personnel and information — must be maintained during normal and interrupted business operations, even if users aren't using trusted networks or devices. During an interruption, it cannot be assumed that users will have access to corporate issued devices or that the IT department can install software on temporary workstations non-corporate issued devices. Therefore, organizations need an access solution to serve as a secure platform for application access, which should provide fine-grained access control, AAA, and strong encryption.

Citrix® NetScaler®, via the integrated Citrix Access Gateway™ Enterprise Edition SSL VPN, provides secure and user-specific remote access to Presentation Server by protecting all network traffic with standards-based SSL and TLS encryption. In a DR/BC scenario, displaced users connect via an easy-to-use Web client to enjoy a rich, desk-like experience. Always-on access seamlessly reconnects users to their documents when they change locations or devices, or lose connectivity. Integrated end-point scanning ensures user devices remain safe for connecting to the corporate network. Access policies and Citrix SmartAccess and Citrix SmoothRoaming™ capabilities determine the level of user access based on administrator-defined rules and end-point analysis, increasing control over how information is accessed. With Action Rights, you can control not just what data can be accessed, but what actions the user can perform, such as print, save, launch and view. The level of access is automatically reconfigured as users roam between devices, locations and connections to ensure appropriate access for each scenario.

Global high availability

Additionally, during an interruption, user access to Presentation Server-published applications needs to be as seamless and transparent as possible, regardless of what network links, servers or data centers happen to be available. Ideally, a user should be able to always use the same Access Gateway, Secure Gateway or Web Interface URL. IT organizations need a solution that continuously monitors the primary Citrix Presentation Server and Access Gateway resources, and that can intelligently and seamlessly redirect users to back-up resources when necessary. Global Server Load Balancing (GSLB) solutions meet this need by checking the availability of the Access Gateway and Presentation Server components in a datacenter in real time. If any of the aforementioned components is not available, users are transparently redirected to a back-up or secondary datacenter, thereby ensuring that they can securely access critical applications and data in the event of a network outage.

Citrix NetScaler ensures global high availability of Presentation Server and Access Gateway deployments in a DR/BC scenario. NetScaler provides transparent high availability and load balancing among multi-site Citrix Presentation Server and Access Gateway environments. Working in conjunction with the DNS infrastructure, GSLB allows the organization to give all users a single, fully qualified domain name for each of the following, regardless of which Presentation Server site the user accesses:

- Web Interface for Citrix Presentation Server
- Citrix Access Gateway
- Citrix Program Neighborhood Agent

When all sites are operating normally, users are directed to the most appropriate site — as configured by the administrator. However, in the event that a site is unavailable or overloaded (based upon several configurable parameters), users are transparently directed to an available Presentation Server site without having to alter their behavior. NetScaler checks the availability and health of the Access Gateway devices and the Web Interface and XML Broker components of Presentation Server. If any of these elements are unresponsive, NetScaler marks the site down, and seamlessly and transparently redirects users to a back-up Presentation Server site. Citrix NetScaler also offers advanced GSLB features that assess application response times, application load and the user's geographic location to intelligently route users to the datacenter that will provide them with the best application response times. This enables enterprises to utilize NetScaler's GSLB functionality to maximize their datacenter investments and provide users with the best application experience under normal business operating conditions by routing them to the most efficient datacenter. Additionally, NetScaler Enterprise and Platinum Editions, which integrate Access Gateway and GSLB functionality, can simplify secure remote access and global high availability, greatly simplifying multi-device management and easing network device sprawl. In conjunction with Citrix Presentation Server, Citrix NetScaler and Access Gateway offer an elegant solution for enterprises to ensure application delivery, global application availability and application security in a DR/BC scenario.

A resilient architecture

The NetScaler Global Server Load Balancing feature can be leveraged to direct users to an available datacenter in the event of an outage. The Global Server Load Balancing feature is based on NetScaler's ability to act as an authoritative DNS server and provide users with an IP address to an available site. Figure 1 gives an overview of the Global Server Load Balancing traffic flow:

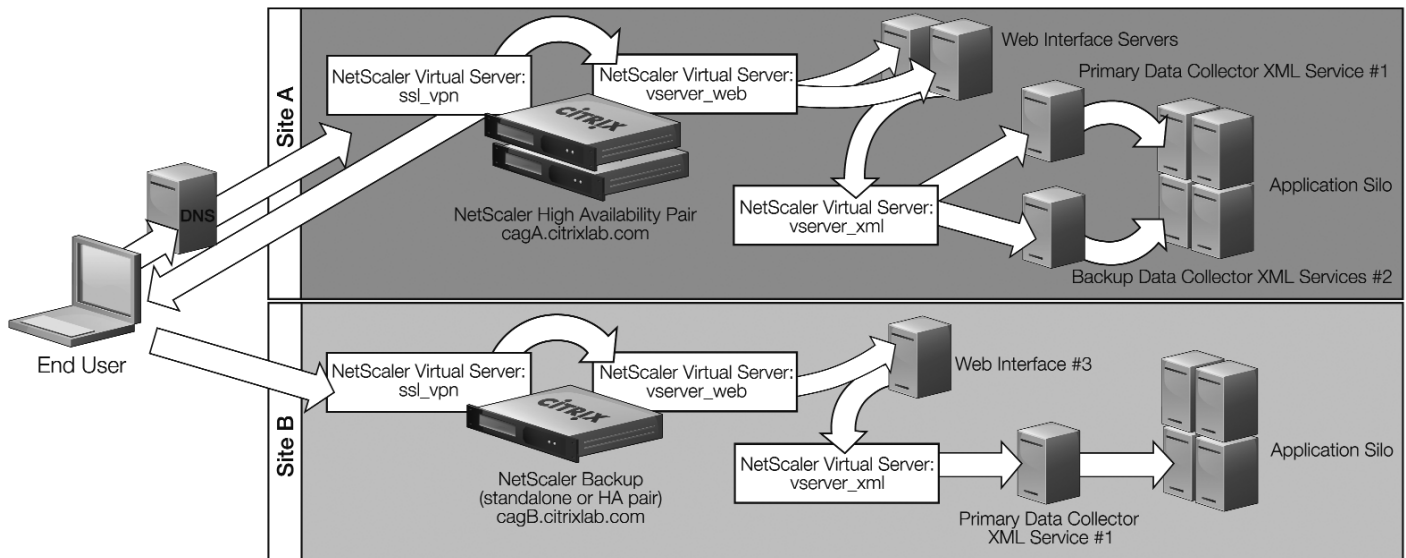


Figure 1 — GSLB Data Flow¹

Note: Citrix Access Gateway functionality is fully incorporated into the NetScaler appliance (included in NetScaler Enterprise and Platinum Editions) to simplify management and streamline the number of devices required.

1. Client makes a DNS request for “cag.citrixlab.com”
2. The corporate DNS server specifies “cag.citrixlab.com” as a forwarding domain and hands the request to one of the two NetScaler appliances for resolution
3. The NetScaler appliance at Site A responds to the DNS request. Depending on the global server load balancing method used (e.g., network health, server health, application health, load or proximity), NetScaler responds with the most appropriate IP address of the Access Gateway virtual server. In the example depicted in Figure 1, it chose Site B.
4. The client connects to the load balancing virtual server at Site B.

In order to provide intelligent global server load balancing, users should only be directed to sites where all relevant services are available. It is not sufficient to simply monitor the health of the Access Gateway component of the NetScaler device, as it is possible that other critical components such as the Web Interface servers or the XML Brokers have failed, resulting in users being denied delivery of their applications. If any critical component were to become unresponsive, the entire site should be marked as unavailable.

This solution can be easily achieved by adding explicit monitors to the global server load balancing services on the NetScaler devices in Site A and Site B. A diagram of the load balancing and global server load balancing architecture is shown in Figure 2.

¹ Multiple NetScaler devices are shown for clarity. All functionality can be utilized from a set of NetScaler devices.

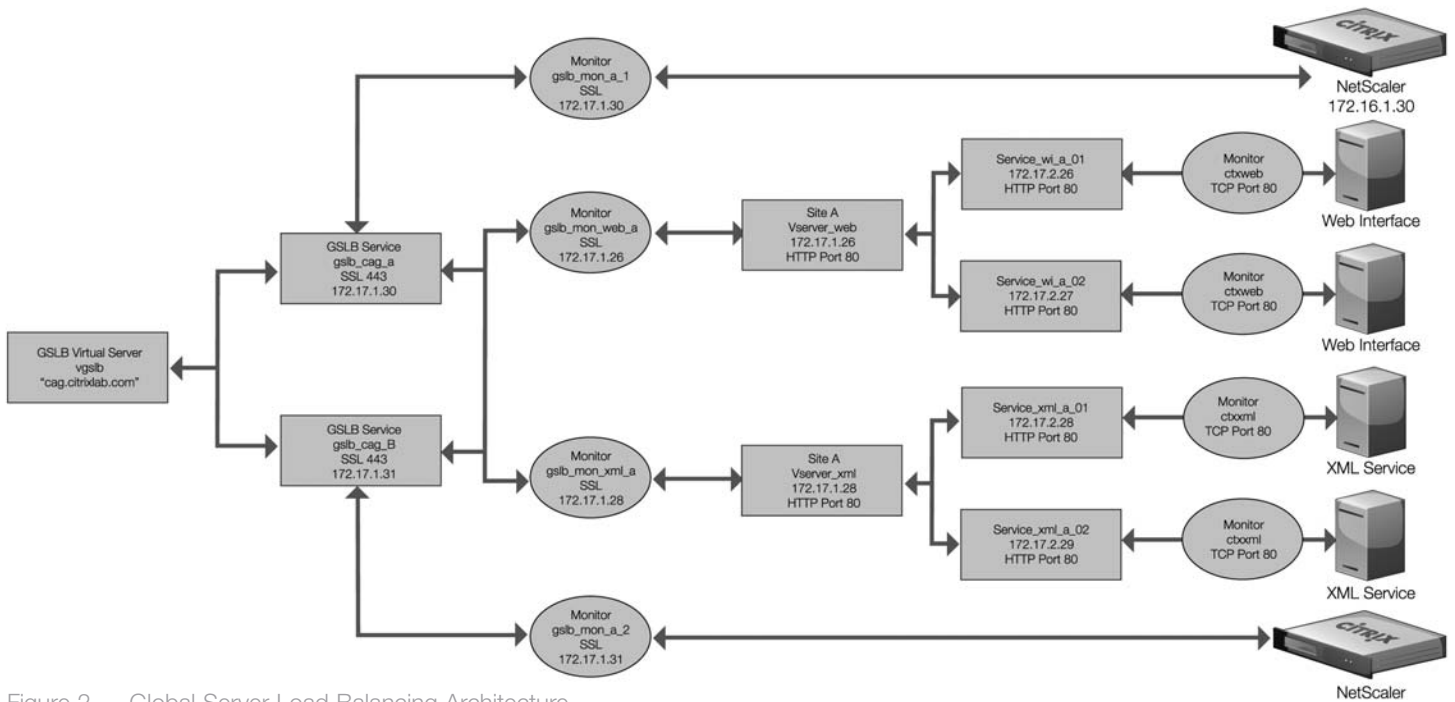


Figure 2 — Global Server Load Balancing Architecture

With global server load balancing added into the architecture, the following risks are mitigated:

- **Multi-Level Monitoring:** The global server load balancing implementation not only determines if the integrated, load balanced component (Access Gateway) is available, but also if other required components (Web Interface and XML Broker) are available. This reference architecture defines three layers of availability. If any one layer fails, the entire site will fail, resulting in seamless re-routing of all new connections to an alternate available site.
- **Intelligent Monitoring:** The multi-level monitoring employed in this reference architecture utilizes the intelligent monitors to verify Web Interface is running with an available site as well as verify that the XML Broker is responding with information. This helps to eliminate being routed to a site with disrupted services.
- **Workflow Interruption:** With the inclusion of global server load balancing, users can travel anywhere and be delivered applications in the best possible way without modifying the system. Users will no longer be required to select their preferred location; the system will sense and respond automatically and seamlessly based on location and availability. Only requiring users to follow a single workflow will help simplify the environment.

Conclusion

How do organizations overcome unforeseen issues? How do users continue to function when there is a disruption in the services of application delivery? Specifically, how can enterprises ensure that applications are available, can be delivered to remote users and are secured, so that business operations can continue with minimal impact? Used in conjunction with Citrix NetScaler and Citrix Access Gateway, Presentation Server securely delivers corporate resources with high availability during an interruption by automatically and seamlessly connecting users to the best and/or nearest server group that is available. With this tightly integrated solution, IT organizations can architect an environment that does not require altering user behavior in the event of a network interruption and can automatically continue to deliver applications to users when resources or entire sites go offline. This solution suite not only provides fault tolerance, but also keeps workers productive, optimizes the IT organization and helps prevent lost revenue in the event of system downtime in a DB/BC scenario.

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

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