XenDesktop Planning Guide:
Load Balancing Web Interface with NetScaler
Overview

Citrix Web Interface is a common method of connecting to both XenApp and XenDesktop. Consequently, if a Web Interface server fails then users will lose access to their applications and desktops. Therefore, ensuring that your Web Interface server is always available is critical. The easiest way to ensure availability is to have a second server available for redundancy. This is simple to implement especially in a virtualized environment such as Citrix XenServer where both Web Interface and Citrix NetScaler can run as virtual machines. NetScaler is available in both a physical (MPX) and virtual (VPX) appliance and provides intelligent load balancing for both Web Interface and the XML components of XenApp and XenDesktop. Additionally, NetScaler includes out of the box integration for secure remote access for both XenApp and XenDesktop environments.

Guidelines

The goal for load balancing is two-fold: provide resiliency in the event of component failure and provide scalability by achieving high throughput and utilization of resources while avoiding overload. Redundancy for Web Interface can be achieved via a traditional “spare” approach (cold, warm, hot) where a backup server is available in case of disaster. However this model may be neither automatic nor efficient. A manual failover is required (or worse a new server must be built) during which there is down time and users will be unable to access their applications and desktops. Additionally, spare resources are underutilized since they are not taking user requests.

A number of load balancing solutions exist including the Windows NLB service. The main reason to choose a load-balancer such as NetScaler over a Windows NLB is because NLB isn’t intelligent when it comes to checking the health of an application. Of course NLB will not direct any incoming requests to servers that crash, but what if your Web Interface application itself crashes? Consider a situation where the server is network accessible via ICMP/TCP but the IIS service is down. Half the users could be directed to a non-functioning Web Interface. NetScaler has built-in health checks or monitors that are application specific for Web Interface, the XML Broker service, and the XenDesktop DDC. The monitors probe the health of the service and essentially determine if the service is viable to take user requests.

Configuration

The Web Interface monitor (CITRIX-WEB-INTERFACE) by default probes the health of the service every 5 seconds and has a 2 second response time out with 3 retries. These settings are configurable and can be extended in environments with additional latency. If a response is not received, the service is put into a DOWN state and no requests are load balanced to it. While in a DOWN state, the service is probed and reevaluated every 30 seconds. The monitor will check a user configurable Web Interface site path that must be identical for all Web Interface services. For example a monitor can be configured to probe the following site path “/Citrix/XenApp/Auth/login.aspx”. As long as the login page is available and the “Set-Cookie”
header is received in the response, the NetScaler determines that the services is UP and available to take user requests.

The XML Broker monitor (CITRIX-XML-SERVICE) probes the health of the XenApp XML service that handles application enumeration among other tasks. When XenApp servers become highly utilized, the XML service stops responding and ultimately, application enumeration stops working until the server's utilization returns to normal or the server is rebooted. The XML Black hole describes the following scenario:

- An XML Broker, IMA, or Terminal Services error occurs on the XML Broker (XenApp Server)
- Web Interface is able to query the XML Broker
- The XML service is not able to query the IMA

The result is the Web Interface receives valid XML data without any Published Applications for the user. Web Interface treats this scenario as a success and does not remove the server from load balancing. Users that logon to Web Interface may or may not receive Published Applications in their list. The NetScaler monitor is configured with a specific Published Application that will then poll the XML Broker services every 5 seconds. If the XML service does not respond with the Published Application, the service will be taken out of the load balancing scheme.

The XenDesktop Controller monitor (CITRIX-XD-DDC) probes the health of the DDC service at the same interval. This monitor periodically checks on to the DDC service, and awaits the expected response. If it receives no response or the wrong response, it marks the service DOWN. The monitor sends an XML request for farm data including the farm name and expects the response. This monitor has no special parameters but future releases will include credential validation.

<table>
<thead>
<tr>
<th>Request</th>
<th>Response</th>
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| `<<?xml version="1.0" encoding="UTF-8"?>
 <!DOCTYPE NFuseProtocol SYSTEM "NFuse.dtd">
 <NFuseProtocol version="4.0">
 <RequestServerFarmData>
 <Nil />
 </RequestServerFarmData>
</NFuseProtocol>`                                                                   | `<<?xml version="1.0" encoding="UTF-8"?>
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 <ServerFarmData>
 <ServerFarmData>
 <ServerFarmData>
 </ResponseServerFarmData>
</NFuseProtocol>`                                                                 |

Citrix continues to update and add more intelligent NetScaler monitors. An example includes a PERL script based Web Interface monitor which ensures that critical components are functioning by validating logon and establishing a Web Interface session.
Considerations

Below are a number of common questions and issues that can be encountered while setting up load balancing of Web Interface.

**Load Balancing Secure Ticket Authority**

When NetScaler is configured to use the Access Gateway Enterprise module for secure remote access, the Secure Ticket Authority (STA) must be configured on the Access Gateway virtual server. The Access gateway virtual server needs separate references to all STA's. You can't refer to a load balanced virtual server. When a user tries to start a Published Application, the STA's identifier is given to the Access Gateway; the Access Gateway must connect directly to the server and check if the given ticket is valid. However, Web Interface can have a virtual server configured to load balance STA ticket requests. In short, Web Interface can use a load balanced virtual server for its STA, but all possible STA servers within the load balanced cluster need to be entered in the Access Gateway explicitly.

**Affinity Persistence**

Many applications are session-based and require persistence; users must connect to the same server to maintain their session. NetScaler will direct all user requests to the same backend server after the initial load balancing decision. Cookie Insert is the recommended persistence method for Web Interface and NetScaler.

**NetBios**

Using a NetScaler appliance to load balance XenApp XML Broker servers may cause enumeration and launching of applications to take a noticeable amount of time. This is the case when Web Interface uses a load balancing virtual server as the XML Broker. A full explanation of the issue and solution is available at the link. [http://support.citrix.com/article/CTX118670](http://support.citrix.com/article/CTX118670)

**User Agent header**

You may notice log entries in the event viewer of the Web Interface server with Access Gateway Enterprise or NetScaler related to missing http header User-Agent. “The request from the browser running on the user device <ip address> cannot be processed because the User-Agent HTTP header, which provides platform information, is missing”. A full explanation of the issue and solution is available at the link. [http://support.citrix.com/article/CTX124858](http://support.citrix.com/article/CTX124858)
## Revision History

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<td>0.1</td>
<td>Document created</td>
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