Deploying Citrix NetScaler for Global Server Load Balancing of Microsoft Lync 2013
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Citrix NetScaler is the industry’s leading application delivery controller (ADC) and the best solution for providing global server load balancing (GSLB) for Microsoft Lync, the enterprise-ready unified communication platform, to optimize and enhance its performance, availability and scalability. This guide will walk you through an easy-to-understand, step-by-step process for deploying NetScaler with Lync 2013.


**Overview of Microsoft Lync 2013**
Microsoft Lync 2013 is an enterprise-ready unified communication platform. It offers features such as instant messaging (IM), voice over IP (VOIP), online conferencing, collaborative development, file sharing, integration with Exchange UM and federation services to integrate with other enterprises or public IM. Find complete information about the product at https://products.office.com/en-IN/lync/.

**Why NetScaler GSLB for Lync 2013?**
Lync 2013 enables employees of medium and large enterprises to conduct internal and external communication securely from any device. Today many enterprises operate multiple data centers, which can be spread across the globe. The NetScaler GSLB module ensures continuous availability and recovery of applications such as Lync deployed at multiple data center locations. NetScaler GSLB balances the load across locations by directing client requests to the closest or best-performing data center, or in the case of an outage, to other nearby data centers.

The NetScaler GSLB feature enhances the availability, performance, usability and manageability of Lync 2013 by providing a high-availability proximity solution. This reduces the overall cost of ownership of Lync and helps improve business productivity.
**Topology**

**External clients**
The GSLB deployment for Lync external clients will logically look like the one shown in Figure 1.

1. An external Lync user tries to log in. A DNS request for lyncdiscover.ctxns.net is issued.

2. The request comes to the NetScaler GSLB virtual server to which this domain is bound.

3. Upon receiving the request, the NetScaler GSLB virtual server resolves the domain name to the public IP address of the Lync reverse proxy at site 1 on the basis of some GSLB intelligence.

4. The reverse proxy connects to the Lync Director server in this site and finds that the user information is available there. As in case of pool pairing, the SQL data is always in sync, so users of one site can log in and use functionalities from any other site.

5. The reverse proxy sends the IP address of the Lync Edge server at site 1.

6. The user then connects to that Edge server and connects to the Director server of this site to validate itself.

7. Then it connects to the Lync Front-End server for IM, presence information and other functionalities.
Disaster situation
In case of a site-level outage that makes site 1 unreachable, site 2 will be up as shown in Figure 2.

Figure 2: Site-level outage

1. An external Lync user belonging to site 1 tries to log into the Lync client. A DNS request for lyncdiscover.ctxns.net is issued.

2. The request comes to the NetScaler GSLB virtual server at site 2, as it is the only active site.

3. Upon receiving the request, the NetScaler GSLB virtual server resolves the domain name to the public IP address of the Lync reverse proxy at site 2.

4. The reverse proxy connects to the Director server at site 2 and recognizes that the user belongs to the down site. This is possible because there is a pool pairing of the Director servers which helps identify the site to which the users belong. Even if the Director server is down in site 1, the user information of site 1 is stored in the Director server of site 2.

5. The reverse proxy sends the Edge server IP of site 2 as the Edge server at site 1 is unavailable.

6. The user then connects to that Edge server and connects to the Director server of site 2 to validate himself.

7. Then the user connects to the Front-end server for IM, presence information and other functionalities. The Front-end servers also are in pool paring mode, which serves the users of the failed site completely.

In this way, the GSLB solution ensures that if there is a data center-level outage, all the clients of that site will automatically connect to the active data center and the Lync application will remain fully available.
Reverse proxy-level outage

In case of a reverse proxy-level outage, where the first point of connection goes down at one of the sites, the flow will be as shown in Figure 3.

![Figure 3: Reverse proxy-level outage](image)

1. An external Lync user belonging to site 1 tries to log in. A DNS request for lyncdiscover.ctxns.net is issued.

2. The request comes to the NetScaler GSLB virtual server at site 2.

3. Upon receiving the request, the NetScaler GSLB virtual server resolves the domain name to the public IP address of the Lync reverse proxy at site 2, as the reverse proxy at site 1 is not reachable.

4. The reverse proxy connects to the Director server at site 2 and recognizes that the user belongs to site 1. This is possible because there is pool pairing of the Director servers, which helps identify the site to which the user belongs.

5. The reverse proxy sends the IP address of the Edge server at site 1, as the user belongs to site 1. Only the reverse proxy at site 1 is unavailable but the Edge server at that site is fully functional.

6. The user then connects to that Edge server and connects to the Director server at site 1 to validate himself.

7. Then the user connects to the Front-end server for IM, presence information and other functionalities.

In this way, the GSLB solution ensures that if there is a component-level outage such as a reverse proxy failure, users can still connect to their site by leveraging the pool capabilities of the Lync servers.
Configuring NetScaler GSLB

Products and version tested

<table>
<thead>
<tr>
<th>Product</th>
<th>Versions</th>
</tr>
</thead>
<tbody>
<tr>
<td>NetScaler system</td>
<td>NetScaler 10.5.52.5</td>
</tr>
<tr>
<td>Microsoft Lync</td>
<td>Lync 2013</td>
</tr>
</tbody>
</table>

Prerequisites and configuration notes

The following are general prerequisites and configuration notes for this guide:

- Lync servers are installed on all the sites and Lync topology is properly configured. Proper configuration ensures that the Director servers and the Front-end servers are in a pool.
- The NetScaler load balancer, SSL and other configurations are made on all the sites.
- All the services are up and running.

Configuring NetScaler GSLB

Step 1: Create sites – local and remote
Step 2: Create services for the local virtual servers
Step 3: Create virtual servers for the GSLB services
Step 4: Bind GSLB services to the GSLB virtual server
Step 5: Bind domain name to the GSLB virtual server

Add Sites

<table>
<thead>
<tr>
<th>GSLB Sites</th>
<th>Name</th>
<th>Give a unique name to the site</th>
</tr>
</thead>
<tbody>
<tr>
<td>(GSLB -&gt; Sites)</td>
<td>Type</td>
<td>Select whether the site will be local or remote</td>
</tr>
<tr>
<td></td>
<td>Site IP Address</td>
<td>Add the site IP address</td>
</tr>
<tr>
<td></td>
<td>Public IP Address</td>
<td>Add the public IP address of this site</td>
</tr>
</tbody>
</table>

![NetScaler configuration screenshot]
All the sites in the topology are added in each NetScaler so that every site is in sync with the others by MEP exchange. This enables each site to know about the health and traffic load of the others.

### Add Services

<table>
<thead>
<tr>
<th>GSLB Services</th>
<th>Service Name</th>
<th>Give a unique name to the service</th>
</tr>
</thead>
<tbody>
<tr>
<td>(GSLB -&gt; Services)</td>
<td>Site Name</td>
<td>Select the site to which this service belong</td>
</tr>
<tr>
<td></td>
<td>Type</td>
<td>Select if the service is IP based or name based</td>
</tr>
<tr>
<td></td>
<td>Service Type</td>
<td>Select the applicable protocol</td>
</tr>
<tr>
<td></td>
<td>Port</td>
<td>Select the applicable port</td>
</tr>
<tr>
<td></td>
<td>Server Name</td>
<td>Select the corresponding NetScaler LB virtual</td>
</tr>
<tr>
<td></td>
<td>Server IP</td>
<td>Add the LB virtual server's IP address</td>
</tr>
<tr>
<td></td>
<td>Public IP</td>
<td>Add the public IP of the LB virtual server</td>
</tr>
<tr>
<td></td>
<td>Public Port</td>
<td>Add the public port number of the LB virtual server</td>
</tr>
</tbody>
</table>
The load balancing virtual servers are added as GSLB services. Both local and remote virtual servers are added in all the GSLB sites.

Adding GSLB virtual servers

<table>
<thead>
<tr>
<th>GSLB Virtual Servers</th>
<th>Name</th>
<th>DNS Record Type</th>
<th>Service Type</th>
<th>Method</th>
<th>Backup Method</th>
<th>Bind appropriate GSLB services and domain names</th>
</tr>
</thead>
<tbody>
<tr>
<td>(GSLB -&gt; Virtual Servers)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
GSLB virtual servers are added in each site and services are bound to them. Also, domain names are bound to each virtual server.

**Conclusion**

Citrix NetScaler, a leading application delivery solution, is best suited to provide hardware-based load balancing and GSLB capabilities for Microsoft Lync 2013. Various features of NetScaler enables more than simple load balancing of Lync servers located in one data center. The NetScaler GSLB feature enhances the availability, performance, usability and manageability of Lync 2013 by providing a high-availability proximity solution. This reduces the overall cost of ownership of Lync and helps improve business productivity. To learn more about how NetScaler can bring these benefits to Lync installations or address other application delivery requirements, please visit [www.citrix.com](http://www.citrix.com).