



MS Lync 2013 Single Pair Addendum

Deployment Guide

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1 Introduction

1.1 Document Purpose

This documentation is intended to provide guidance on how to configure a single pair of Kemp LoadMaster products to provide high availability for a Microsoft Lync Server 2013 environment. This documentation is created using a representative sample environment described later in the document. As this documentation is not intended to cover every possible deployment scenario it may not address unique setup or requirements. The Kemp Support Team is available to provide solutions for scenarios not explicitly defined.

1.2 Related Firmware Version

Published with LMOS version 7.2.48.3 LTS. This document has not required changes since 7.2.48.3 LTS. However, the content is in sync with the latest LoadMaster LTS firmware.

1.3 Prerequisites

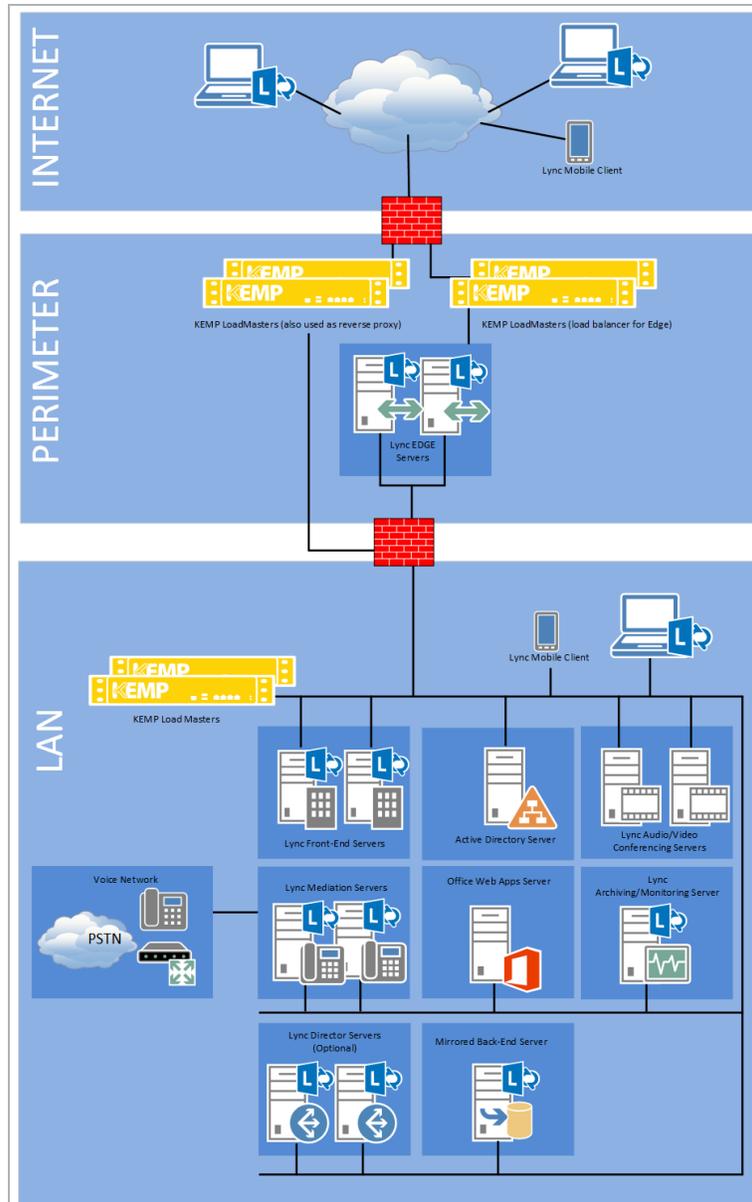
It is assumed that the reader is a network administrator or a person otherwise familiar with networking and general computer terminology. It is further assumed that the Microsoft Lync Server 2013 environment has been set up and the Kemp LoadMaster has been installed.

Other LoadMaster documentation can be referred to as needed from <http://kemptechnologies.com/loadmaster-documentation>.

The minimum requirements that should be met before proceeding are as follows:

- LoadMaster firmware version 7.0-6 or above should be installed
- Configured and published Microsoft Lync Server architecture with Lync Topology builder
- Installed the Microsoft Servers, Active Directories and followed other Microsoft requirements
- Configured internal and external DNS entries for Front-End, Director and Edge pools
- Established access to the LoadMaster Web User Interface (WUI)

2 Load Balancing Microsoft Lync 2013

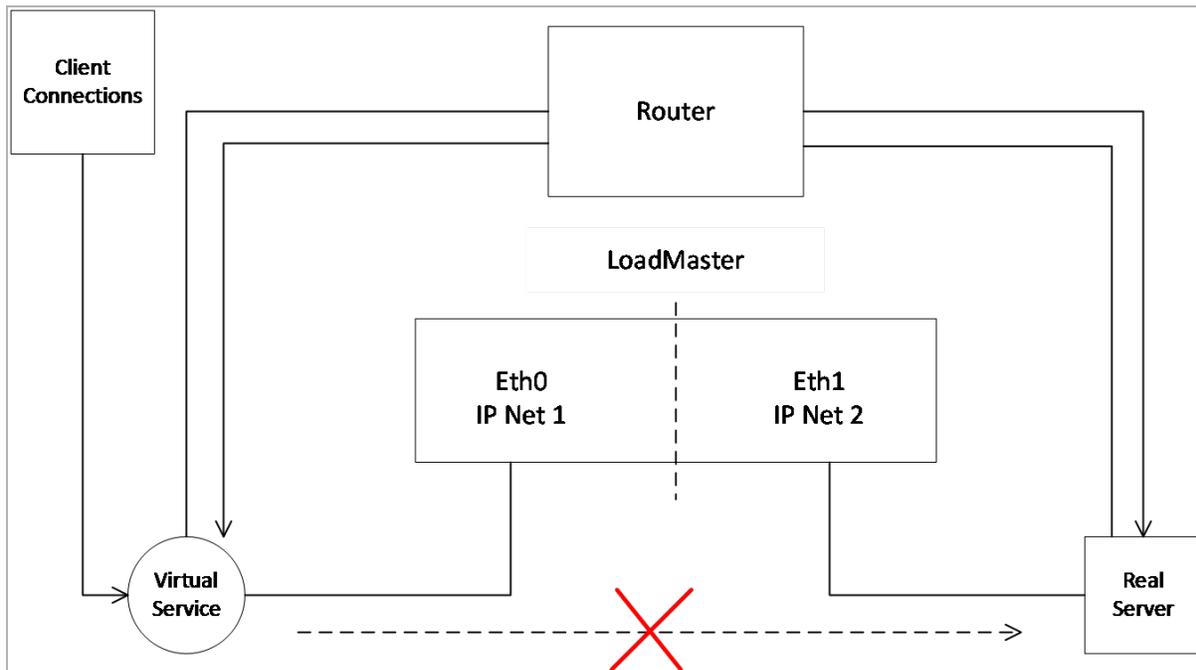




CAUTION! – While Kemp supports the configuration as depicted in the above diagram, this deployment option departs from the Microsoft recommended standard, as described in [http://technet.microsoft.com/en-us/library/gg398478\(v=ocs.14\).aspx](http://technet.microsoft.com/en-us/library/gg398478(v=ocs.14).aspx). If your configuration differs from that depicted above, please contact the local Kemp Support Team for assistance.

3 Network Segmentation to support Lync deployments

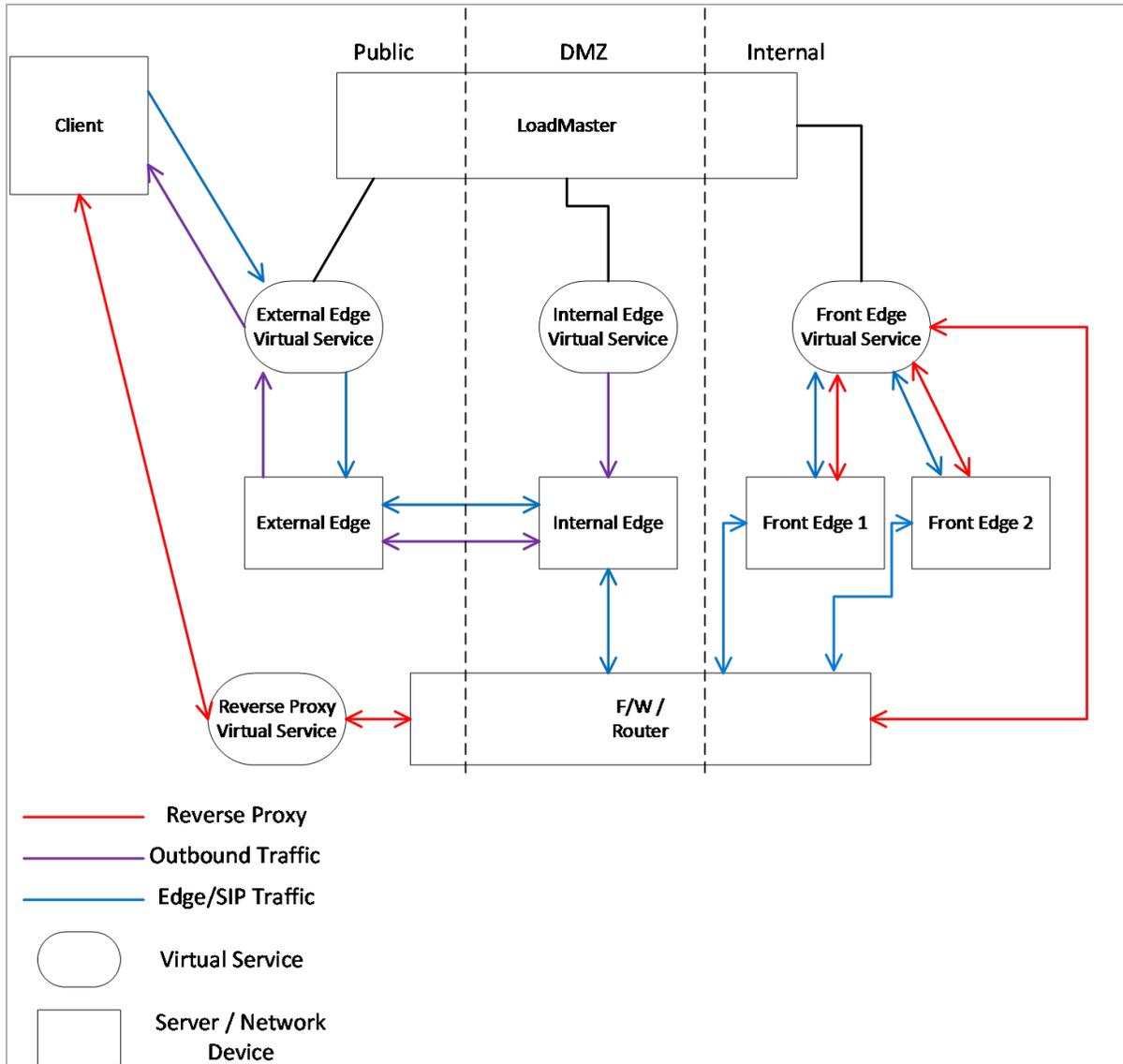
LoadMaster uses the concept of a Virtual Service to publish services to clients. Clients can be actual end user clients or other servers which require access to the servers published by the Virtual Service. Virtual Services within the LoadMaster give the LoadMaster knowledge about local routes between networks. Using the local route/short cut between these interfaces may not always be the desired behaviour and this can be true within the Lync context specifically when configuring a Multi headed deployment on a single pair of LoadMaster devices.



Enabling Use Default Route Only “forces” traffic to follow back from Virtual Services to Real Server when a Default Gateway is configured on the specific Virtual Service.

If the traffic flowing between Virtual Service and the Real Server is able to take the shorter route using the LoadMaster when symmetric network operation is not required then that is achieved by not having a Virtual Service Default Gateway. Note - If a Virtual Service does not have a default route then the LoadMaster default route will be used.

To apply the above set up to the Lync Single Pair deployment a typical packet flow is shown in the below diagram. Deployments are unique and alternative flows may be configured or required depending on the specific deployment.



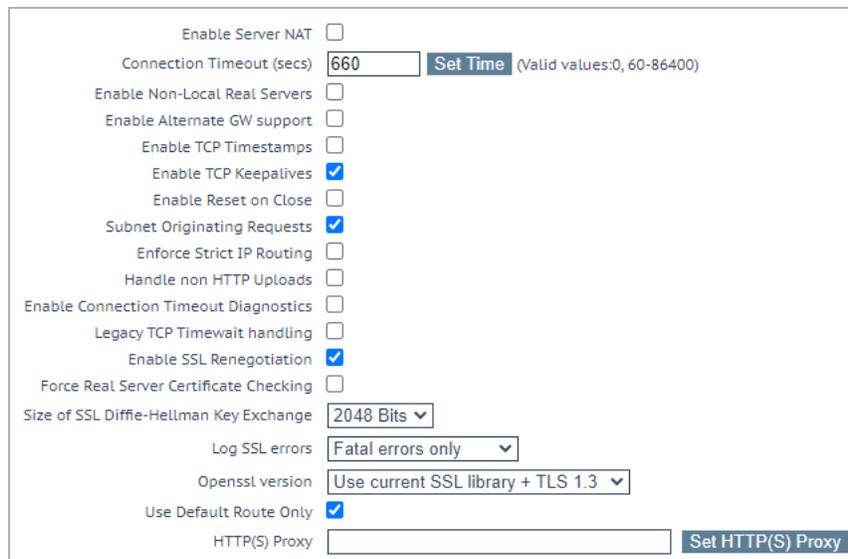
4 General Configuration

The required additional LoadMaster configuration settings are outlined below to support a single pair deployment. These options can be set within the LoadMaster WUI.

4.1 Enable Use Default Route Only

In order to route traffic properly in a single pair configuration, the Use Default Route Only option must be enabled globally.

1. In the main menu, select **System Configuration**.
2. Select **Miscellaneous Options**.
3. Select **Network Options**.



Enable Server NAT

Connection Timeout (secs) **Set Time** (Valid values:0, 60-86400)

Enable Non-Local Real Servers

Enable Alternate GW support

Enable TCP Timestamps

Enable TCP Keepalives

Enable Reset on Close

Subnet Originating Requests

Enforce Strict IP Routing

Handle non HTTP Uploads

Enable Connection Timeout Diagnostics

Legacy TCP Timewait handling

Enable SSL Renegotiation

Force Real Server Certificate Checking

Size of SSL Diffie-Hellman Key Exchange

Log SSL errors

Openssl version

Use Default Route Only

HTTP(S) Proxy **Set HTTP(S) Proxy**

4. Enable **Use Default Route Only**.

When enabled, this option forces traffic from Virtual Services that have default route entries set, to only be routed to the interface where the Virtual Services' default route is located.

5 Configuring Virtual Services for Lync 2013

This guide covers three types of Virtual Service; **DNS Only**, **HLB only** and those that are common to both types of environment. The below sections provide the additional instructions and recommended configuration options for setting up a single pair of Kemp LoadMasters to work with Lync 2013 using these configuration options.

For an explanation of each of the fields mentioned, refer to the **Web User Interface (WUI), Configuration Guide**.

5.1 Lync Internal WebSvc HTTPS Virtual Service

To configure a Virtual Service for Lync Internal WebSvc HTTP, follow the additional steps below:

▼ Advanced Properties			
Not Available Server	<input type="text"/>	Port <input type="text"/>	Set Server Address
Default Gateway	<input type="text" value="10.11.0.1"/>	Set Default Gateway	
Alternate Source Addresses	<input type="text"/>	Set Alternate Source Addresses	
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.1.1 Lync Director 2013 DNS Virtual Service

To configure a Virtual Service for Lync Director, follow the additional steps below:

▼ Advanced Properties			
Not Available Server	<input type="text"/>	Port <input type="text"/>	Set Server Address
Default Gateway	<input type="text" value="10.11.0.1"/>	Set Default Gateway	
Alternate Source Addresses	<input type="text"/>	Set Alternate Source Addresses	
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:

2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.1.2 Lync Internal WebSvc HTTP Virtual Service

To configure a Virtual Service for Lync Internal WebSvc HTTP, follow the additional steps below:

▼ Advanced Properties	
Content Switching	Disabled <input type="button" value="Enable"/>
HTTP Selection Rules	<input type="button" value="Show Selection Rules"/>
HTTP Header Modifications	<input type="button" value="Show Header Rules"/>
Port Following	Follow: <input type="text" value="No VIP Selected"/> ▼
Enable Caching	<input type="checkbox"/>
Enable Compression	<input type="checkbox"/>
Detect Malicious Requests	<input type="checkbox"/>
Enable Multiple Connect	<input type="checkbox"/>
Add Header to Request	<input type="text"/> : <input type="text"/> <input type="button" value="Set Header"/>
Add HTTP Headers	<input type="text" value="Legacy Operation(X-ClientSide)"/> ▼
"Sorry" Server	<input type="text"/> Port <input type="text"/> <input type="button" value="Set Server Address"/>
Not Available Redirection Handling	Error Code: <input type="text"/> ▼
	Redirect URL: <input type="text"/> <input type="button" value="Set Redirect URL"/>
Default Gateway	<input type="text" value="10.11.0.1"/> <input type="button" value="Set Default Gateway"/>
Alternate Source Addresses	<input type="text"/> <input type="button" value="Set Alternate Source Addresses"/>
Service Specific Access Control	<input type="button" value="Access Control"/>

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the internal network (this default gateway will be on the same network as the Virtual Service)

5.2 HLB Only Configuration

The HLB only configuration instructions are below.

5.2.1 Lync Director 2013 HLB Virtual Service

To configure a Virtual Service for Lync Director, follow the additional steps below:

▼ Advanced Properties	
Not Available Server	<input type="text"/> Port <input type="text"/> <input type="button" value="Set Server Address"/>
Default Gateway	<input type="text" value="10.11.0.1"/> <input type="button" value="Set Default Gateway"/>
Alternate Source Addresses	<input type="text"/> <input type="button" value="Set Alternate Source Addresses"/>
Service Specific Access Control	<input type="button" value="Access Control"/>

1. Expand **Advanced Properties** section and input the following options:

2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.2 Lync Internal Director SIP Virtual Service

To configure a Virtual Service for Lync Internal Director SIP, follow the additional steps below:

▼ Advanced Properties			
Not Available Server	<input type="text"/>	Port <input type="text"/>	Set Server Address
Default Gateway	10.11.0.1		Set Default Gateway
Alternate Source Addresses	<input type="text"/>		Set Alternate Source Addresses
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.3 Lync Mediation Virtual Service

DNS-only load balancing is sufficient for Mediation pools. If using the LoadMaster instead of DNS, load balance only TCP port **5070**.

To configure a Virtual Service for Lync Mediation, follow the additional steps below:

▼ Advanced Properties			
Not Available Server	<input type="text"/>	Port <input type="text"/>	Set Server Address
Default Gateway	10.11.0.1		Set Default Gateway
Alternate Source Addresses	<input type="text"/>		Set Alternate Source Addresses
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.4 Lync Edge Internal AV Media TCP Virtual Service

This is the fallback path for A/V media transfer. It is used for file transfer and desktop sharing.

To configure a Virtual Service for Lync Edge Internal AV Media TCP, follow the additional steps below:

▼ Advanced Properties			
Not Available Server	<input type="text"/>	Port <input type="text"/>	Set Server Address
Default Gateway	<input type="text" value="192.168.100.1"/>	Set Default Gateway	
Alternate Source Addresses	<input type="text"/>	Set Alternate Source Addresses	
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.5 Lync Edge Internal SIP Virtual Service

This is used by Directors and FE Pools.

To configure a Virtual Service for Lync Edge Internal SIP, follow the additional steps below:

▼ Advanced Properties			
Not Available Server	<input type="text"/>	Port <input type="text"/>	Set Server Address
Default Gateway	<input type="text" value="192.168.100.1"/>	Set Default Gateway	
Alternate Source Addresses	<input type="text"/>	Set Alternate Source Addresses	
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.6 Lync Internal WebSvc HTTP Virtual Service

To configure a Virtual Service for Lync Internal WebSvc HTTP, follow the additional steps below:

▼ Advanced Properties	
Content Switching	Disabled Enable
HTTP Selection Rules	Show Selection Rules
HTTP Header Modifications	Show Header Rules
Port Following	Follow: No VIP Selected ▼
Enable Caching	<input type="checkbox"/>
Enable Compression	<input type="checkbox"/>
Detect Malicious Requests	<input type="checkbox"/>
Enable Multiple Connect	<input type="checkbox"/>
Add Header to Request	<input type="text"/> : <input type="text"/> Set Header
Add HTTP Headers	Legacy Operation(X-ClientSide) ▼
"Sorry" Server	<input type="text"/> Port <input type="text"/> Set Server Address
Not Available Redirection Handling	Error Code: <input type="text"/> ▼
	Redirect URL: <input type="text"/> Set Redirect URL
Default Gateway	10.11.0.1 Set Default Gateway
Alternate Source Addresses	<input type="text"/> Set Alternate Source Addresses
Service Specific Access Control	Access Control

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.7 Lync Internal Front-End DCOM Virtual Service

To configure a Virtual Service for Lync Internal WebSvc HTTP, follow the additional steps below:

▼ Advanced Properties	
Not Available Server	<input type="text"/> Port <input type="text"/> Set Server Address
Default Gateway	10.11.0.1 Set Default Gateway
Alternate Source Addresses	<input type="text"/> Set Alternate Source Addresses
Service Specific Access Control	Access Control

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.8 Lync Internal WebSvc HTTPS Virtual Service

To configure a Virtual Service for Lync Internal WebSvc HTTPS HLB Only, follow the additional steps below:

▼ Advanced Properties			
Not Available Server	<input type="text"/>	Port <input type="text"/>	Set Server Address
Default Gateway	<input type="text" value="10.11.0.1"/>	Set Default Gateway	
Alternate Source Addresses	<input type="text"/>	Set Alternate Source Addresses	
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.9 Lync Internal Front-End SIP Virtual Service

To configure a Virtual Service for Lync Internal Front-End SIP, follow the additional steps below:

▼ Advanced Properties			
Not Available Server	<input type="text"/>	Port <input type="text"/>	Set Server Address
Default Gateway	<input type="text" value="10.11.0.1"/>	Set Default Gateway	
Alternate Source Addresses	<input type="text"/>	Set Alternate Source Addresses	
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.10 Configure Edge Virtual Services

To configure the various Edge Virtual Services, refer to the sections below.

When load balancing external interfaces of Edge pools, Access VIP should be used as the default gateway on all Edge interfaces. Also, a publicly routable IP with no NAT or port translation must be used.

5.2.10.1 Lync Edge External SIP Virtual Service

To configure a Virtual Service for Lync Edge External SIP, follow the additional steps below:

▼ Advanced Properties			
"Sorry" Server	<input type="text"/>	Port <input type="text"/>	Set Server Address
Default Gateway	<input type="text" value="201.44.53.1"/>	Set Default Gateway	
Add a Port 80 Redirector VS	Redirection URL: <input type="text" value="https://%h%s"/>	Add HTTP Redirector	
Alternate Source Addresses	<input type="text"/>	Set Alternate Source Addresses	
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:

2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.10.2 Lync Edge External SIP Federation Virtual Service

To configure a Virtual Service for Lync Edge External SIP Federation, follow the additional steps below:

▼ Advanced Properties	
"Sorry" Server	<input type="text"/> Port <input type="text"/> Set Server Address
Default Gateway	<input type="text" value="201.44.53.1"/> Set Default Gateway
Add a Port 80 Redirector VS	Redirection URL: <input type="text" value="https://%h%s"/> Add HTTP Redirector
Alternate Source Addresses	<input type="text"/> Set Alternate Source Addresses
Service Specific Access Control	Access Control

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.10.3 Lync Edge External XMPP Virtual Service

To configure a Virtual Service for Lync Edge External XMPP, follow the additional steps below:

▼ Advanced Properties	
"Sorry" Server	<input type="text"/> Port <input type="text"/> Set Server Address
Default Gateway	<input type="text" value="201.44.53.1"/> Set Default Gateway
Add a Port 80 Redirector VS	Redirection URL: <input type="text" value="https://%h%s"/> Add HTTP Redirector
Alternate Source Addresses	<input type="text"/> Set Alternate Source Addresses
Service Specific Access Control	Access Control

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.10.4 Lync Edge External Conferencing Virtual Service

To configure a Virtual Service for Lync Edge External Conferencing, follow the additional steps below:

▼ Advanced Properties	
"Sorry" Server	<input type="text"/> Port <input type="text"/> Set Server Address
Default Gateway	201.44.53.1 Set Default Gateway
Add a Port 80 Redirector VS	Redirection URL: <input type="text" value="https://%h%s"/> Add HTTP Redirector
Alternate Source Addresses	<input type="text"/> Set Alternate Source Addresses
Service Specific Access Control	Access Control

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.2.10.5 Lync Edge External AV Media TCP Virtual Service

To configure a Virtual Service for Lync Edge External AV, follow the additional steps below:

▼ Advanced Properties	
"Sorry" Server	<input type="text"/> Port <input type="text"/> Set Server Address
Default Gateway	201.44.53.1 Set Default Gateway
Add a Port 80 Redirector VS	Redirection URL: <input type="text" value="https://%h%s"/> Add HTTP Redirector
Alternate Source Addresses	<input type="text"/> Set Alternate Source Addresses
Service Specific Access Control	Access Control

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.3 Common to Both

The Virtual Services listed below are common to both DNS and HLB configurations.

5.3.1 Lync Office Web App Servers Virtual Service

To configure a Virtual Service for Office Web App Servers, follow the additional steps below:

▼ **Advanced Properties**

Content Switching	Disabled	Enable
HTTP Selection Rules	Show Selection Rules	
HTTP Header Modifications	Show Header Rules	
Port Following	Follow:	No VIP Selected ▼
Enable Caching	<input type="checkbox"/>	
Enable Compression	<input type="checkbox"/>	
Detect Malicious Requests	<input type="checkbox"/>	
Enable Multiple Connect	<input type="checkbox"/>	
Add Header to Request	<input type="text"/> : <input type="text"/>	Set Header
Add HTTP Headers	Legacy Operation(X-ClientSide) ▼	
"Sorry" Server	<input type="text"/> Port <input type="text"/>	Set Server Address
Not Available Redirection Handling	Error Code:	<input type="text"/> ▼
	Redirect URL:	https://%h%s Set Redirect URL
Default Gateway	192.168.100.1	Set Default Gateway
Alternate Source Addresses	<input type="text"/>	Set Alternate Source Addresses
Service Specific Access Control	Access Control	

1. Expand the **Advanced Properties** section.
2. Enter **https://%h%s** in the **Redirection URL** field and click **Add HTTP Redirector**.
3. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.3.2 Lync Reverse Proxy HTTP Virtual Service

To configure a Virtual Service for Lync Reverse Proxy HTTP, follow the additional steps below:

▼ **Advanced Properties**

Content Switching	Enabled	Rule Precedence	Disable
HTTP Selection Rules	Show Selection Rules		
HTTP Header Modifications	Show Header Rules		
Enable Caching	<input type="checkbox"/>		
Enable Compression	<input type="checkbox"/>		
Detect Malicious Requests	<input type="checkbox"/>		
Enable Multiple Connect	<input type="checkbox"/>		
Add Header to Request	<input type="text"/> : <input type="text"/>	Set Header	
Add HTTP Headers	Legacy Operation(X-ClientSide) ▼		
"Sorry" Server	<input type="text"/> Port <input type="text"/>	Set Server Address	
Not Available Redirection Handling	Error Code:	<input type="text"/> ▼	
	Redirect URL:	<input type="text"/>	Set Redirect URL
Default Gateway	192.168.100.1	Set Default Gateway	
Alternate Source Addresses	<input type="text"/>	Set Alternate Source Addresses	
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:

2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

5.3.3 Lync Reverse Proxy HTTPS Virtual Service

To configure a Virtual Service for Lync Reverse Proxy HTTPS, follow the additional steps below:

▼ **Advanced Properties**

Content Switching	Enabled	Rule Precedence	Disable
HTTP Selection Rules	Show Selection Rules		
HTTP Header Modifications	Show Header Rules		
Enable Caching	<input type="checkbox"/>		
Enable Compression	<input type="checkbox"/>		
Detect Malicious Requests	<input type="checkbox"/>		
Enable Multiple Connect	<input type="checkbox"/>		
Add Header to Request	<input type="text"/>	:	<input type="text"/> Set Header
Add HTTP Headers	Legacy Operation(X-ClientSide) ▼		
"Sorry" Server	<input type="text"/>	Port	<input type="text"/> Set Server Address
Not Available Redirection Handling	Error Code:	<input type="text"/> ▼	
	Redirect URL:	<input type="text"/>	Set Redirect URL
Default Gateway	<input type="text" value="192.168.100.1"/>	Set Default Gateway	
Alternate Source Addresses	<input type="text"/>	Set Alternate Source Addresses	
Service Specific Access Control	Access Control		

1. Expand **Advanced Properties** section and input the following options:
2. Enter the **Default Gateway** for the connected network (this default gateway will be on the same network as the Virtual Service)

6 Additional Information

Some additional information that may be of use is contained within the sections below.

6.1 Server Maintenance

When blocking traffic to a server during maintenance, removing the server IP entry from the pool Fully Qualified Domain Name (FQDN) is not sufficient. The server entry must be removed from the DNS. As the server to server traffic is topology-aware, in order to block server to server traffic the server must be removed from the DNS topology.

6.2 Loss of Failover while using DNS

Loss of failover when load balancing Edge pools using DNS is possible in the following scenarios:

- Federation with organizations running OCS versions older than Lync 2010
- PIM connectivity with Skype, Windows Live, AOL, Yahoo! and XMPP partners
- UM Play on Phone functionality
- Transferring calls from UM Auto Attendant

6.3 Hardware Load Balancing

If hardware load balancing is being used, a list of the ports that must be open can be found here: <http://technet.microsoft.com/en-us/library/gg398833.aspx>

Hardware load balancing Edge servers requires N+1 Public IP addresses.

Refer to the two links below for further information on hardware load balancing:

- <http://technet.microsoft.com/en-us/library/gg398739.aspx>
- <http://technet.microsoft.com/en-us/library/gg398478.aspx>

6.4 Configuration Caution

CAUTION – A Single Pair deployment means that Internal and External traffic traverses the same LoadMaster unit. As a result, a denial of service could impact both the internal and external Lync Server deployment.

References

The following sources are referred to in this document:

Kemp website

www.kemptechnologies.com

Kemp Documentation page

<http://kemptechnologies.com/loadmaster-documentation>

Web User Interface (WUI), Configuration Guide

<http://kemptechnologies.com/loadmaster-documentation>

Virtual Services and Templates, Feature Description

<http://kemptechnologies.com/loadmaster-documentation>

Ports and Protocols for Internal Servers

1. <http://technet.microsoft.com/en-us/library/gg398833.aspx>

Port Summary - Scaled Consolidated Edge with Hardware Load Balancers

2. <http://technet.microsoft.com/en-us/library/gg398739.aspx>

Scaled Consolidated Edge with Hardware Load Balancers

3. <http://technet.microsoft.com/en-us/library/gg398478.aspx>

Last Updated Date

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