



# **Deployment Guide MS Skype For Business 2015**

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# Introduction

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## Introduction

Progress Kemp's LoadMaster family of purpose-built hardware and Virtual LoadMasters (VLMs) offer advanced Layer 4 and Layer 7 server load balancing, content switching, SSL Acceleration and a multitude of other advanced Application Delivery and Optimization (ADC) features.

The LoadMaster fully supports Microsoft's key solutions and are approved by Microsoft. The LoadMaster efficiently distributes user traffic for Microsoft Skype for Business 2015 so that users get the best experience possible.

The entire LoadMaster product family, including the Virtual LoadMaster (VLM) supports Microsoft Skype for Business 2015.

For more information about Progress Kemp, visit us online at [www.kemptechnologies.com](http://www.kemptechnologies.com).

### Related Links

- [Microsoft Skype for Business 2015](#)
- [Intended Audience](#)
- [Document Purpose](#)
- [Prerequisites](#)

# Microsoft Skype for Business 2015

## Microsoft Skype for Business 2015

Microsoft Skype for Business 2015 is a communications tool which provides services such as audio/video conferencing, Instant Messaging (IM) and Voice over Internet Protocol (VoIP). These services can all be accessible from the Internet, or from an internal network. Microsoft Skype for Business 2015 allows companies to enhance collaboration amongst employees.

A number of enhancements have been made in Microsoft Skype for Business 2015. The network topology setup is quite similar to the previous version (Lync 2013) but with a number of small differences. The Director role is still optional and is not recommended. Less servers are needed because front-end servers can now take the role of Director. A new role has been added called the Video Interoperability Server (VIS) which acts as an intermediary between third party teleconference systems and the Skype for Business 2015 deployment.

## Intended Audience

### Intended Audience

Anyone interested in configuring the LoadMaster to load balance Skype for Business.

## Document Purpose

### Document Purpose

This documentation is intended to provide guidance on how to configure LoadMaster products to provide High Availability (HA) for a Microsoft Skype for Business 2015 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 Progress Kemp Support Team is available to provide solutions for scenarios not explicitly defined.

## Prerequisites

### 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 Skype for Business 2015 environment has been set up and the LoadMaster has been installed.

Other LoadMaster documentation can be referred to as needed from <https://docs.progress.com/>.

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

- LoadMaster firmware version 7.1 or above should be installed

- Configured and published Microsoft Skype for Business 2015 architecture with Skype for Business 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)

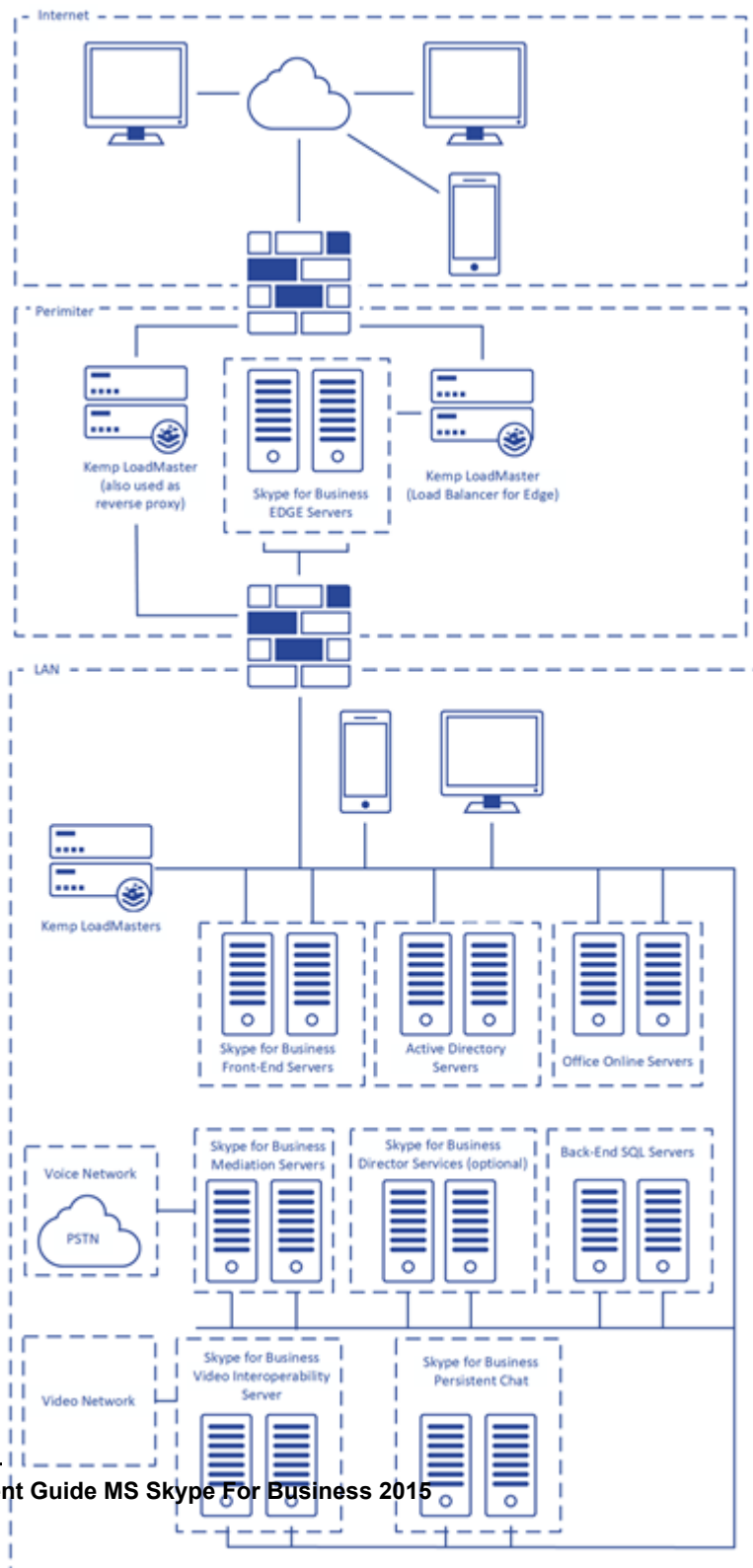
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# 2



# Load Balancing Microsoft Skype for Business 2015

## Load Balancing Microsoft Skype for Business 2015



Deploying a Microsoft Skype for Business 2015 environment can require multiple servers in Front-End pools and Edge server pools. Load balancing is necessary in this situation to distribute the traffic amongst these servers.

Microsoft Skype for Business 2015 supports two load balancing solutions: DNS load balancing and Hardware Load Balancing (HLB). Hardware load balancers are also required to provide load balancing for the internal and external web services when DNS load balancing is used.

Different load balancing methods cannot be used on the Edge internal and Edge external interfaces, that is, DNS load balancing cannot be used on the Edge internal interface when hardware load balancing is being used on the Edge external interface. Health checking at the LoadMaster ensures that, if one of the servers becomes inaccessible, the load balancer will take the sever offline and automatically re-route and reconnect users to other functioning servers.

We recommend the configuration as depicted in the above diagram. If your configuration differs from the recommended configuration and there are issues deploying the LoadMaster, please contact the local Progress Kemp Support Team for assistance.

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# Template

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## Template

Progress Kemp has developed a template containing our recommended settings for this workload. You can install this template to help create Virtual Services (VSs) because it automatically populates the settings. You can use the template to easily create the required VSs with the recommended settings. For some workloads, additional manual steps may be required such as assigning a certificate or applying port following. These steps are covered in the document, if needed.

You can remove templates after use and this will not affect deployed services. If needed, you can make changes to any of the VS settings after using the template.

Download released templates from the following page: [LoadMaster Templates](#).

For more information and steps on how to import and use templates, refer to the [Virtual Services and Templates, Feature Description](#).

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# General Configuration

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## General Configuration

Some recommended general LoadMaster configuration settings are outlined below. These options can be set within the LoadMaster WUI.

### Related Links

- [Disable SNAT Globally](#)
- [Change Drop Connections Settings](#)
- [Increase the Connection Drain Time](#)
- [Connection Scaling For Large Scale Deployments](#)
- [Layer 4 Considerations before Deployment](#)
- [Enable Subnet Originating Requests Globally](#)
- [Enable Check Persist Globally](#)

## Disable SNAT Globally

### Disable SNAT Globally

By default, global Server Network Address Translation (SNAT) is enabled in the LoadMaster settings. We recommend disabling SNAT globally when using the LoadMaster with a Skype for Business 2015 environment. To disable SNAT globally, follow the steps below:

1. In the main menu, select **System Configuration**.

2. Select **Miscellaneous Options**.
3. Select **Network Options**.

Enable Server NAT ☐

4. Clear the **Enable Server NAT** check box.

## Change Drop Connections Settings

### Change Drop Connections Settings

The LoadMaster must be configured to drop connections on Real Server Failure to have fast failover for clients to another Real Server.

1. To configure dropping connections, click **System Configuration**.
2. Click **Miscellaneous Options**.
3. Click **L7 Configuration**.

Drop Connections on RS failure ☒

4. Select the **Drop Connections on RS** failure checkbox.

## Increase the Connection Drain Time

### Increase the Connection Drain Time

The LoadMaster Connection Timeout must be set to one day. The reason why this value can be set so high is because the LoadMaster monitors client connection to Real Servers and if a server fails then the LoadMaster can drop the associated client connections to that Real Server. Clients are disconnected from the LoadMaster and then reconnected to the LoadMaster to connect to another Real Server.

One day is the maximum value for this setting and it must be used in conjunction with the **Drop Connections on RS failure** option.

1. To configure the Connection Timeout, click **System Configuration**.
2. Click **Miscellaneous Options**.
3. Click **L7 Configuration**.

L7 Connection Drain Time (secs)  **Set Time** (Valid values:0, 60 - 86400)

4. Enter **86400** (1 day) in the **L7 Connection Drain Time (secs)** field and click **Set Time**.

# Connection Scaling For Large Scale Deployments

## Connection Scaling For Large Scale Deployments

Execution of this procedure is optional and should be used only in cases where network traffic is expected to be greater than 64,000 server connections at any one particular time.

L7 Transparency must be disabled in order to use connection scaling.

1. To use connection scaling, click **System Configuration**.
2. Click **Miscellaneous Options**.
3. Click **L7 Configuration**.

Allow connection scaling over 64K Connections ☒

4. Select the **Allow connection scaling over 64K Connections** checkbox.
5. Click **Virtual Services**.
6. Click **View/Modify Services**.
7. Click the **Modify** button of the appropriate Virtual IP Address.
8. Expand the **Advanced Properties** section.

### Advanced Properties

Content Switching	Disabled	<b>Enable</b>
HTTP Selection Rules	<b>Show Selection Rules</b>	
HTTP Header Modifications	<b>Show Header Rules</b>	
Response Body Modification	<b>Show Body Modification Rules</b>	
Response Code Modification	<input type="checkbox"/>	<b>Show Text &amp; Mappings</b>
Enable HTTP/2 Stack	<input type="checkbox"/>	
Enable Caching	<input type="checkbox"/>	
Enable Compression	<input type="checkbox"/>	
Detect Malicious Requests	<input type="checkbox"/>	
Reschedule on every HTTP Request	<input type="checkbox"/>	
Add Header to Request	<input type="text"/> : <input type="text"/>	<b>Set Header</b>
Copy Header in Request	<input type="text"/> To Header <input type="text"/>	<b>Set Headers</b>
Add HTTP Headers	Legacy Operation(X-Forwarded-For) <input type="text"/>	
"Sorry" Server	<input type="text"/> Port <input type="text"/>	<b>Set Server Address</b>
Not Available Redirection Handling	Error Code: <input type="text"/>	<input type="text"/>
	Redirect URL: <input type="text"/>	<b>Set Redirect URL</b>
Default Gateway	<input type="text"/>	<b>Set Default Gateway</b>
Alternate Source Addresses	<input type="text"/>	<b>Set Alternate Source Addresses</b>
Service Specific Access Control	<b>Access Control</b>	

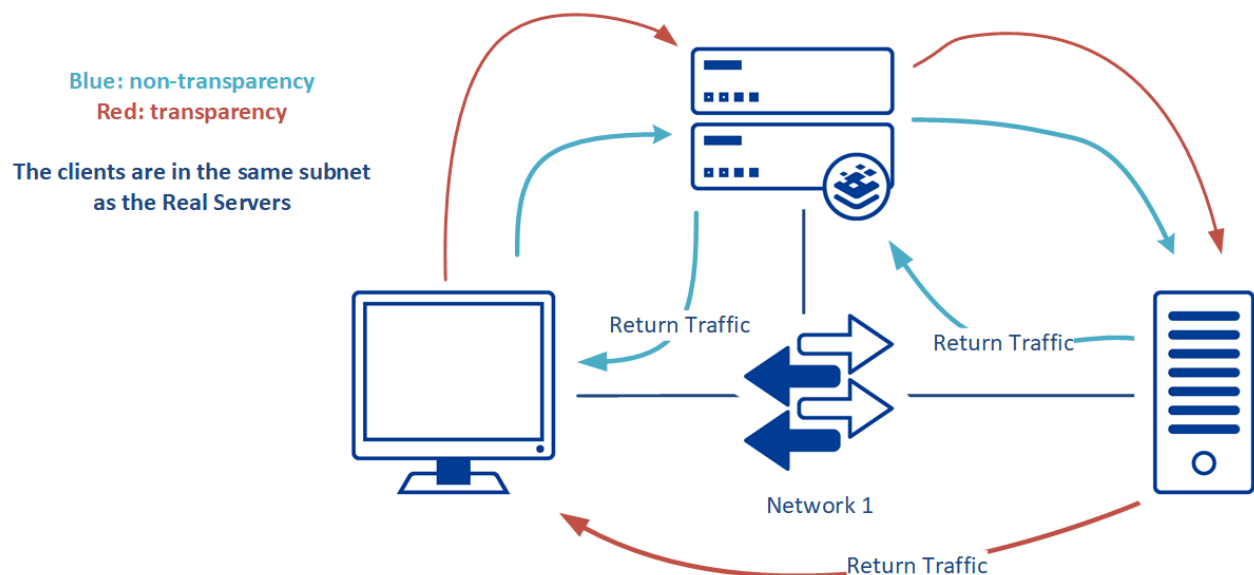
9. In the **Advanced Properties** panel, input a list of **Alternate Source Addresses**. Multiple IPV4 addresses must be separated with a space; each must be unallocated and allow 64K connections.
10. Click the **Set Alternate Source Addresses** button.

## Layer 4 Considerations before Deployment

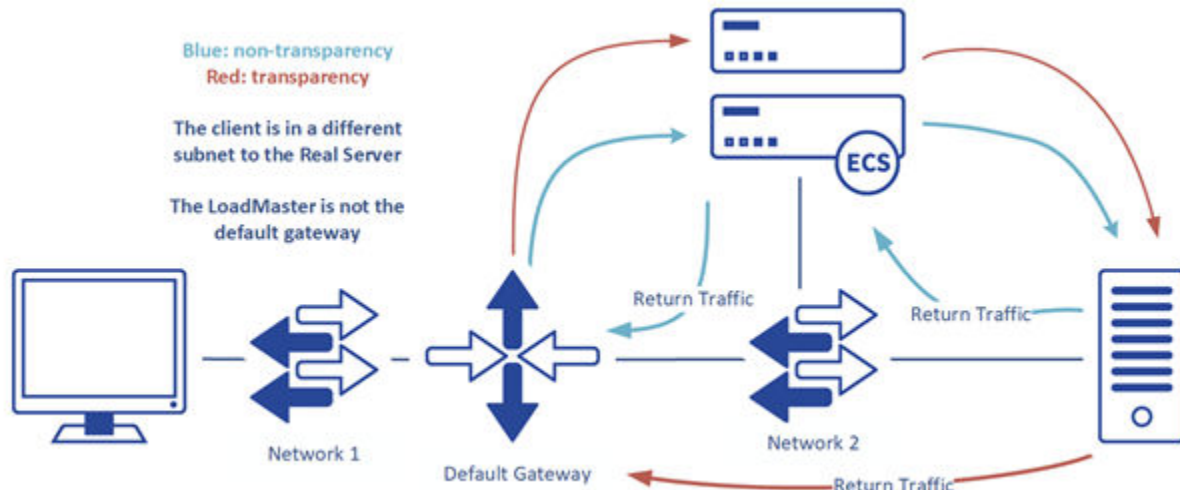
### Layer 4 Considerations before Deployment

For this application, if you are using an L4 service, it is automatically transparent. When using transparency, the following steps must be followed:

If clients are on the same subnet as the Real Server, returning traffic to the LoadMaster is instead sent to the client. This is asymmetric routing and causes the client to drop the connection because it is expecting it from the LoadMaster, not the Real Server. The diagram below shows the flow of traffic when this rule is not followed.



If the Real Servers' default gateway is not set to be the LoadMaster's interface (the shared IP if the LoadMasters are in HA), traffic returning to the LoadMaster is instead sent to the gateway. This is asymmetric routing and causes the connection to drop because the connection should be sent from the LoadMaster, not the Real Server. The diagram below shows the flow of traffic when this rule is not followed.



## Enable Subnet Originating Requests Globally

### Enable Subnet Originating Requests Globally

It is best practice to enable the **Subnet Originating Requests** option globally.

In a one-armed setup (where the Virtual Service and Real Servers are on the same network/subnet) **Subnet Originating Requests** is usually not needed. However, enabling **Subnet Originating Requests** should not affect the routing in a one-armed setup.

In a two-armed setup where the Virtual Service is on network/subnet A, for example, and the Real Servers are on network B, **Subnet Originating Requests** should be enabled on LoadMasters with firmware version 7.1-16 and above.



When **Subnet Originating Requests** is enabled, the Real Server sees traffic originating from 10.20.20.21 (LoadMaster eth1 address) and responds correctly in most scenarios.

With **Subnet Originating Requests** disabled, the Real Server sees traffic originating from 10.0.0.15 (LoadMaster Virtual Service address on **eth0**) and responds to **eth0** which could cause asymmetric routing.

When **Subnet Originating Requests** is enabled globally, it is automatically enabled on all Virtual Services. If the **Subnet Originating Requests** option is disabled globally, you can choose whether to enable **Subnet Originating Requests** on a per-Virtual Service basis.

To enable **Subnet Originating Requests** globally, follow the steps below:



1. In the main menu of the LoadMaster User Interface (UI), go to **System Configuration > Miscellaneous Options > Network Options**.
2. Select the **Subnet Originating Requests** check box.

## Enable Check Persist Globally

### Enable Check Persist Globally

It is recommended that you change the **Always Check Persist** option to **Yes – Accept Changes**. Use the following steps:

1. Go to **System Configuration > Miscellaneous Options > L7 Configuration**.
2. Click the **Always Check Persist** drop-down arrow and select **Yes – Accept Changes**.

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# Configuring Skype for Business 2015 Virtual Services

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## Configuring Skype for Business 2015 Virtual Services

This deployment 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 instructions and recommended configuration options for setting up a LoadMaster to work with Skype for Business 2015 with the use of Virtual Service templates.

The table in each section outlines the API settings and values. You can use this information when using the LoadMaster API and automation tools.

For an explanation of each of the fields mentioned, refer to the [Documentation Page](#).

### Related Links

- [DNS Configuration](#)
- [HLB Only Configuration](#)
- [Configure External Edge Virtual Services](#)
- [Common to Both with Templates](#)

# DNS Configuration

## DNS Configuration

Refer to the sections below for instructions on how to set up the LoadMaster using a DNS only configuration using the Progress Kemp templates.

Microsoft recommends that DNS load balancing is used for Session Initiation Protocol (SIP) traffic. Microsoft also recommends that web services are configured to override FQDN for internal web services.

### Source IP Persistence

Source IP persistence can be used but take care before enabling it because:

- Clients from behind a NAT device show up as a single IP
- It can result in uneven connection distribution

### Cookies

If cookies are used, there is no negative impact. However, there are some requirements:

- The cookie must be named **MS-WSMAN**
- It must not expire
- It must not be marked httpOnly
- Cookie optimization should be turned off

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

### Related Links

- [Director DNS](#)
- [Front End DNS](#)

## Director DNS

### Director DNS

The **Skype Director DNS** template contains two Virtual Services.

- Skype Director DNS - WebSvc HTTP
- Skype Director DNS - WebSvc HTTPS

### Deploy Director DNS template

To add the Virtual Services for Skype Director DNS with the template, follow the steps below:

1. Click the **Add New** button.

## Please Specify the Parameters for the Virtual Service.

Virtual Address	<input type="text" value="192.168.10.244"/>
Port	<input type="text" value="80"/>
Service Name (Optional)	<input type="text" value="Skype Director DNS"/>
Use Template	<input type="text" value="Skype Director DNS"/>
Protocol	<input type="text" value="tcp"/>

2. Enter a **Virtual Address**.
3. Select the **Skype Director DNS** template from the **Use Template** drop-down list.
4. Click **Add This Virtual Service**.

## Configure Director DNS WebSvc HTTP Virtual Service

To configure the SfB Director WebSvc HTTP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Name	Layer	Certificate Installed	Status	Real Servers	Operation
Skype Director DNS - WebSvc HTTP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Director DNS - WebSvc HTTPS	L7	on Real Server	● Down		<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Director DNS - WebSvc HTTP** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 80** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Director DNS WebSvc HTTP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	80
prot	tcp
ForceL7	1

API Parameter	API Value
Transparent	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Configure Director DNS WebSvc HTTPS Virtual Service

To configure the **Skype Director DNS - WebSvc HTTPS** Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Name	Layer	Certificate Installed	Status	Real Servers	Operation
Skype Director DNS - WebSvc HTTP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Director DNS - WebSvc HTTPS	L7	on Real Server	● Down		<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Director DNS - WebSvc HTTPS** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 443** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Director DNS WebSvc HTTPS Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp

API Parameter	API Value
ForceL7	1
Transparent	0
ExtraPorts	444
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Front End DNS

### Front End DNS

The **Skype Front End DNS** template contains two Virtual Services.

- Skype Front End DNS - WebSVC HTTP
- Skype Front End DNS - WebSVC HTTPS

### Deploy Front End DNS template

To add the Virtual Services for Skype for Business Front End with the template, follow the steps below:

1. Click the **Add New** button.

Please Specify the Parameters for the Virtual Service.

---

Virtual Address	<input type="text" value="192.168.10.245"/>
Port	<input type="text" value="80"/>
Service Name (Optional)	<input type="text" value="Skype Front End DNS"/>
Use Template	<input type="text" value="Skype Front End DNS"/>
Protocol	<input type="text" value="tcp"/>

2. Enter a **Virtual Address**.
3. Select the **Skype Front End DNS** template under **Use Template**.
4. Click **Add This Virtual Service**.

## Configure Front End DNS WebSvc HTTP Virtual Service

To configure the **Skype Front End DNS - WebSVC HTTP** Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

tcp	Skype Front End DNS - WebSVC HTTP	L7		● Down	<a href="#">Modify</a>	<a href="#">Delete</a>
tcp	Skype Front End DNS - WebSVC HTTPS	L7	on Real Server	● Down	<a href="#">Modify</a>	<a href="#">Delete</a>

2. Click **Modify** on the **Skype Front End DNS - WebSVC HTTP** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 80** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Front End DNS WebSvc HTTP Virtual Service Recommended API settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	80
prot	tcp
ForceL7	1
Transparent	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Configure Front End DNS WebSvc HTTPS Virtual Service

To configure the **Skype Front End DNS - WebSVC HTTPS** Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Front End DNS - WebSVC HTTP	L7		● Down	<a href="#">Modify</a>	<a href="#">Delete</a>
Skype Front End DNS - WebSVC HTTPS	L7	on Real Server	● Down	<a href="#">Modify</a>	<a href="#">Delete</a>

2. Click **Modify** on the **Skype Front End DNS - WebSVC HTTPS** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**
5. Enter the **Real Server Address**.
6. Confirm that **Port 443** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Front End DNS WebSvc HTTPS Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp
ForceL7	1
Transparent	0
ExtraPorts	444
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## HLB Only Configuration

### HLB Only Configuration

The HLB only configuration instructions using the Progress Kemp Templates are below.

#### Related Links



- [Director HLB Only](#)
- [Front End HLB Only](#)
- [Mediation HLB Only Virtual Service](#)
- [Edge Internal HLB Only](#)

## Director HLB Only

### Director HLB Only

The **Skype Director HLB Only** template contains three Virtual Services:

- Skype Director HLB Only - WebSvc HTTP
- Skype Director HLB Only - WebSvc HTTPS
- Skype Director HLB Only - SIP

### Deploy Director HLB Only template

To add the Virtual Services for Skype Director with the template, follow the steps below:

1. Click the **Add New** button.

Please Specify the Parameters for the Virtual Service.

Virtual Address	<input type="text" value="192.168.10.244"/>
Port	<input type="text" value="80"/>
Service Name (Optional)	<input type="text" value="Skype Director HLB Onl"/>
Use Template	<input type="text" value="Skype Director HLB Only"/>
Protocol	<input type="text" value="tcp"/>

2. Enter a **Virtual Address**.
3. Select the **Skype Director HLB Only** template in the **Use Template** drop-down list.
4. Click **Add This Virtual Service**.

### Configure Director HLB WebSvc HTTP Virtual Service

To configure the **Skype Director HLB Only - WebSvc HTTP** Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Name	Layer	Certificate Installed	Status	Real Servers	Operation
Skype Director HLB Only - WebSvc HTTP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Director HLB Only - WebSvc HTTPS	L7	on Real Server	● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Director HLB Only - SIP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Director HLB Only - WebSvc HTTP** Virtual Service.

3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 80** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Director HLB WebSvc HTTP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	80
prot	tcp
ForceL7	1
Transparent	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Configure Director HLB WebSvc HTTPS Virtual Service

To configure the Skype Director HLB Only - WebSvc HTTPS Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Name	Layer	Certificate Installed	Status	Real Servers	Operation
Skype Director HLB Only - WebSvc HTTP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Director HLB Only - WebSvc HTTPS	L7	on Real Server	● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Director HLB Only - SIP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Director HLB Only - WebSvc HTTPS** Virtual Service.

3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 443** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Director HLB WebSvc HTTPS Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp
ForceL7	1
Transparent	0
ExtraPorts	444
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Configure Director HLB SIP Virtual Service

To configure the Skype Director HLB Only - SIP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Name	Layer	Certificate Installed	Status	Real Servers	Operation
Skype Director HLB Only - WebSvc HTTP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Director HLB Only - WebSvc HTTPS	L7	on Real Server	● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Director HLB Only - SIP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Director HLB Only - SIP** Virtual Service.

3. Expand **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 5061** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Director HLB SIP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	5061
prot	tcp
VStype	gen
ForceL7	1
Transparent	0
ServerInit	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
UseforSnat	1
CheckType	tcp
CheckPort	5061

## Front End HLB Only

### Front End HLB Only

The Skype Front End HLB Only template contains four Virtual Services:

- Skype Front End HLB Only - WebSvc HTTP
- Skype Front End HLB Only - WebSvc HTTPS
- Skype Front End HLB Only - SIP

- Skype Front End HLB Only - DCOM

## Deploy Front End HLB Only template

To add the Virtual Services for Skype Front End with the template, follow the steps below:

1. Click the **Add New** button.

Please Specify the Parameters for the Virtual Service.

Virtual Address	<input type="text" value="192.168.10.245"/>
Port	<input type="text" value="135"/>
Service Name (Optional)	<input type="text" value="Skype Front End HLB O"/>
Use Template	<input type="text" value="Skype Front End HLB Only"/>
Protocol	<input type="text" value="tcp"/>

2. Enter a **Virtual Address**.
3. Select **Skype Front End HLB Only** in the **Use Template** drop-down list.
4. Click **Add This Virtual Service**.

## Configure Front End HLB WebSvc HTTP Virtual Service

To configure the Skype Director HLB Only - WebSvc HTTP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Name	Layer	Certificate Installed	Status	Real Servers	Operation
Skype Front End HLB Only - WebSvc HTTP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - DCOM	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - WebSvc HTTPS	L7	on Real Server	● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - SIP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Director HLB Only - WebSvc HTTP** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 80** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Front End HLB WebSvc HTTP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	80
prot	tcp
ForceL7	1
Transparent	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Configure Front End HLB WebSvc HTTPS Virtual Service

To configure the Skype Front End HLB Only - WebSvc HTTPS Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Name	Layer	Certificate Installed	Status	Real Servers	Operation
Skype Front End HLB Only - WebSvc HTTP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - DCOM	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - WebSvc HTTPS	L7	on Real Server	● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - SIP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Front End HLB Only - WebSvc HTTPS** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 443** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Front End HLB WebSvc HTTPS Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp
ForceL7	1
Transparent	0
ExtraPorts	444
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Configure Front End HLB DCOM Virtual Service

To configure the Skype Front End HLB Only - DCOM Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Name	Layer	Certificate Installed	Status	Real Servers	Operation
Skype Front End HLB Only - WebSvc HTTP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - DCOM	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - WebSvc HTTPS	L7	on Real Server	● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - SIP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Front End HLB Only - DCOM** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 135** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Front End HLB DCOM Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	135
prot	tcp
Transparent	0
ServerInit	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Configure Front End HLB SIP Virtual Service

To configure the Skype Front End HLB Only - SIP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Name	Layer	Certificate Installed	Status	Real Servers	Operation
Skype Front End HLB Only - WebSvc HTTP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - DCOM	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - WebSvc HTTPS	L7	on Real Server	● Down		<a href="#">Modify</a> <a href="#">Delete</a>
Skype Front End HLB Only - SIP	L7		● Down		<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Front End HLB Only - SIP** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 5061** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.



## Front End HLB SIP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	5061
prot	tcp
VStype	gen
ExtraPorts	448,5070-5073,5075,5076,5080
ServerInit	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Mediation HLB Only Virtual Service

### Mediation HLB Only 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 Skype Mediation with the template, follow the steps below:

1. Click the **Add New** button.

Please Specify the Parameters for the Virtual Service.

Virtual Address	<input type="text" value="192.168.10.246"/>
Port	<input type="text" value="5070"/>
Service Name (Optional)	<input type="text" value="Skype Mediation HLB O"/>
Use Template	<input type="text" value="Skype Mediation HLB Only"/>
Protocol	<input type="text" value="tcp"/>

2. Enter a **Virtual Address**.
3. Select **Skype Mediation HLB Only** in the **Use Template** drop-down list.
4. Click **Add This Virtual Service**.
5. Expand the **Real Servers** section.
6. Click **Add New**.
7. Enter the **Real Server Address**.
8. Confirm that **Port 5070** is entered.
9. Click **Add This Real Server**.
10. Add additional Real Servers as needed.

## Mediation HLB Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	5070
prot	tcp
VStype	gen
ForceL7	1
Transparent	0
ServerInit	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5070

## Edge Internal HLB Only

### Edge Internal HLB Only

The Skype Edge Internal HLB Only template contains three Virtual Services:

- Skype Edge Internal HLB Only - AV Media TCP

- Skype Edge Internal HLB Only - AV Media UDP
- Skype Edge Internal HLB Only - SIP

## Deploy Edge Internal HLB template

To add the Virtual Services for Skype for Business Director with Template, follow the steps below:

1. Click the **Add New** button.

Please Specify the Parameters for the Virtual Service.

Virtual Address	<input type="text" value="192.168.10.247"/>
Port	<input type="text" value="443"/>
Service Name (Optional)	<input type="text" value="Skype Edge Internal HLB"/>
Use Template	<input type="text" value="Skype Edge Internal HLB Only"/>
Protocol	<input type="text" value="tcp"/>

2. Enter a **Virtual Address**.
3. Select the **Skype Edge Internal HLB Only** template in the **Use Template** drop-down list.
4. Click **Add This Virtual Service**.

## Configure Edge Internal HLB AV Media TCP Virtual Service

To configure the Skype Edge Internal HLB Only - AV Media TCP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Edge Internal HLB Only - AV Media TCP	L7	on Real Server	● Down	<a href="#">Modify</a> <a href="#">Delete</a>
Skype Edge Internal HLB Only - AV Media UDP	L4		● Down	<a href="#">Modify</a> <a href="#">Delete</a>
Skype Edge Internal HLB Only - SIP	L7		● Down	<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Edge Internal HLB Only - AV Media TCP** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 443** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Edge Internal HLB AV Media TCP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp
VStype	gen
ForceL7	1
Transparent	0
ServerInit	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Configure Edge Internal HLB AV Media UDP Virtual Service

To configure the Skype Edge Internal HLB Only - AV Media UDP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Edge Internal HLB Only - AV Media TCP	L7	on Real Server	● Down	Modify Delete
Skype Edge Internal HLB Only - AV Media UDP	L4		● Down	Modify Delete
Skype Edge Internal HLB Only - SIP	L7		● Down	Modify Delete

2. Click **Modify** on the **Skype Edge Internal HLB Only - AV Media UDP** Virtual Service.
3. Expand **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 3478** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Edge Internal HLB AV Media UDP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	3478
prot	udp
Persist	src
PersistTimeout	1200
Schedule	lc
CheckType	icmp

## Configure Edge Internal HLB SIP Virtual Service

To configure the Skype Edge Internal HLB Only - SIP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Edge Internal HLB Only - AV Media TCP	L7	on Real Server	● Down	Modify	Delete
Skype Edge Internal HLB Only - AV Media UDP	L4		● Down	Modify	Delete
Skype Edge Internal HLB Only - SIP	L7		● Down	Modify	Delete

2. Click **Modify** on the **Skype Edge Internal HLB Only - SIP** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**
5. Enter the **Real Server Address**.
6. Confirm that **Port 5061** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Edge Internal HLB SIP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	5061
prot	tcp
VStype	gen

API Parameter	API Value
ExtraPorts	5062
Transparent	0
ServerInit	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
UseforSnat	1
CheckType	tcp
CheckPort	5061

---

**Note:** Port 5062 is used by any Front End (FE) pool and Survivable Branch Appliance (SBA).

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## Configure External Edge Virtual Services

### Configure External Edge Virtual Services

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

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**Note:** When load balancing external interfaces of Edge pools, the shared interface IP 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.

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**Note:** The number of public IP addresses required for Edge can be found at this link: <https://learn.microsoft.com/en-us/skypeforbusiness/plan-your-deployment/edge-server-deployments/edge-environmental-requirements>

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#### Related Links

- [Edge External HLB Only](#)
- [Edge External Conferencing](#)
- [Edge External AV HLB Only](#)

## Edge External HLB Only

### Edge External HLB Only

The Skype Edge External HLB Only template contains three Virtual Services:

- Skype Edge External HLB Only - SIP
- Skype Edge External HLB Only - SIP Federation
- Skype Edge External HLB Only - XMPP

### Deploy Edge External HLB Template

To add the Virtual Services for Skype Edge External HLB Only with the template, follow the steps below:

1. Click the **Add New** button.

Please Specify the Parameters for the Virtual Service.

Virtual Address	<input type="text" value="192.168.10.252"/>
Port	<input type="text" value="5269"/>
Service Name (Optional)	<input type="text" value="Skype Edge External HL"/>
Use Template	<input type="text" value="Skype Edge External HLB Only"/>
Protocol	<input type="text" value="tcp"/>

2. Enter a **Virtual Address**.
3. Select the **Skype Edge External HLB Only** template in the **Use Template** drop-down list.
4. Click **Add This Virtual Service**.

### Configure Edge External HLB SIP Virtual Service

To configure the SfB Edge External SIP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Edge External HLB Only - SIP	L7	on Real Server	● Down	Modify	Delete
Skype Edge External HLB Only - SIP Federation	L7		● Down	Modify	Delete
Skype Edge External HLB Only - XMPP	L7		● Down	Modify	Delete

2. Click **Modify** on the **SfB Edge External SIP** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 443** is entered.
7. Click **Add This Real Server**.

8. Add additional Real Servers as needed.

## Edge External HLB SIP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp
ForceL7	1
Transparent	0
Persist	src
PersistTimeout	1200
Schedule	lc
Idletime	1800
CheckType	tcp
CheckPort	5061

## Configure Edge External HLB SIP Federation Virtual Service

To configure the Skype Edge External HLB Only - SIP Federation Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Edge External HLB Only - SIP	L7	on Real Server	● Down	Modify	Delete
Skype Edge External HLB Only - SIP Federation	L7		● Down	Modify	Delete
Skype Edge External HLB Only - XMPP	L7		● Down	Modify	Delete

2. Click **Modify** on the **Skype Edge External HLB Only - SIP Federation** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 5061** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.



## Edge External HLB SIP Federation Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	5061
prot	tcp
ForceL7	1
Transparent	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Configure Edge External HLB XMPP Virtual Service

To configure the Skype Edge External HLB Only - XMPP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left hand navigation.

Skype Edge External HLB Only - SIP	L7	on Real Server	● Down	Modify	Delete
Skype Edge External HLB Only - SIP Federation	L7		● Down	Modify	Delete
Skype Edge External HLB Only - XMPP	L7		● Down	Modify	Delete

2. Click **Modify** on the **Skype Edge External HLB Only - XMPP** Virtual Service.
3. Expand **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 5269** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Edge External HLB XMPP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	5269
prot	tcp
ForceL7	1
Transparent	0
ServerInit	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

## Edge External Conferencing

### Edge External Conferencing

To configure a Virtual Service for Skype Edge External Conferencing with the template, follow the steps below:

1. Click the **Add New** button.

Please Specify the Parameters for the Virtual Service.

---

Virtual Address	<input type="text" value="192.168.10.250"/>
Port	<input type="text" value="443"/>
Service Name (Optional)	<input type="text" value="Skype Edge External Conferencing"/>
Use Template	<input type="text" value="Skype Edge External Conferencing ▼"/>
Protocol	<input type="text" value="tcp ▼"/>

2. Enter a **Virtual Address**.

3. Select the **Skype Edge External Conferencing** template in the **Use Template** drop-down list.
4. Click **Add This Virtual Service**.
5. Expand the **Real Servers** section.
6. Click **Add New**.
7. Enter the **Real Server Address**.
8. Confirm that **Port 443** is entered.
9. Click **Add This Real Server**.
10. Add additional Real Servers as needed.

## Edge External HLB Conferencing Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp
ForceL7	1
Transparent	0
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	443

## Edge External AV HLB Only

### Edge External AV HLB Only

The Skype Edge External AV HLB Only template contains two Virtual Services:

- Skype Edge External AV HLB Only - Media TCP
- Skype Edge External AV HLB Only - Media UDP

### Deploy Edge External AV HLB Template

To add the Virtual Services for Skype Edge External AV with the template, follow the steps below:

1. Click the **Add New** button.

Please Specify the Parameters for the Virtual Service.

Virtual Address	<input type="text" value="192.168.10.244"/>
Port	<input type="text" value="443"/>
Service Name (Optional)	<input type="text" value="Skype Edge External AV"/>
Use Template	<input type="text" value="Skype Edge External AV HLB Only ▼"/>
Protocol	<input type="text" value="tcp ▼"/>

2. Enter a **Virtual Address**.
3. Select the **Skype Edge External AV HLB Only** template in the **Use Template** drop-down list.
4. Click **Add This Virtual Service**.

## Configure Edge External HLB AV Media TCP Virtual Service

To configure the Skype Edge External AV HLB Only - Media TCP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left hand navigation.

Skype Edge External AV HLB Only - Media TCP	L7	on Real Server	● Down	<a href="#">Modify</a> <a href="#">Delete</a>
Skype Edge External AV HLB Only - Media UDP	L4		● Down	<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the Skype Edge External AV HLB Only - Media TCP Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 443** is entered.
7. Click **Add This Real Server**.
8. Add additional Real Servers as needed.

## Edge External HLB AV Media TCP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp
ForceL7	1

API Parameter	API Value
Transparent	1
Persist	src
PersistTimeout	1200
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	443

## Configure Edge External HLB AV Media UDP Virtual Service

To configure the Skype Edge Internal HLB Only - AV Media UDP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Edge External AV HLB Only - Media TCP	L7	on Real Server	<span>● Down</span>	<a href="#">Modify</a> <a href="#">Delete</a>
Skype Edge External AV HLB Only - Media UDP	L4		<span>● Down</span>	<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the Skype Edge Internal HLB Only - AV Media UDP Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 3478** is entered.
7. Set the **Forwarding Method** to **Direct Return**.
8. Click **Add This Real Server**.
9. Add additional Real Servers as needed.

**Note:** Ensure the **Forwarding Method** is set to **Direct Return** when adding the Real Servers.

## Edge External HLB Media UDP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	3478

API Parameter	API Value
prot	udp
Persist	src
PersistTimeout	1200
Schedule	lc
CheckType	icmp

---

**Note:** Ensure the **Forwarding Method** is set to **Direct Return** when adding the Real Servers.

---

## Common to Both with Templates

### Common to Both with Templates

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

#### Related Links

- [Office Web App Servers Virtual Service](#)
- [Director Reverse Proxy](#)
- [Front End Reverse Proxy](#)

## Office Web App Servers Virtual Service

### Office Web App Servers Virtual Service

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

1. Click the **Add New** button.

Please Specify the Parameters for the Virtual Service.

---

Virtual Address	<input type="text" value="192.168.10.243"/>
Port	<input type="text" value="443"/>
Service Name (Optional)	<input type="text" value="Skype Office Web App S"/>
Use Template	<input type="text" value="Skype Office Web App Servers"/>
Protocol	<input type="text" value="tcp"/>

2. Enter a **Virtual Address**.
3. Select **Skype Office Web App Servers** in the **Use Template** drop-down list.

4. Click **Add This Virtual Service**.
5. Expand the **SSL Properties** section.

6. Select a valid certificate which was previously imported and click the > button to assign the certificate.
7. Click **Set Certificates**.
8. Expand the **Real Servers** section.
9. Click **Add New**.
10. Enter the **Real Server Address**.
11. Confirm that **Port 443** is entered.
12. Click **Add This Real Server**.
13. Add additional Real Servers as needed.

## Office Web App Servers Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp

API Parameter	API Value
SSLAcceleration	1
SSLReencrypt	1
Persist	super-src
PersistTimeout	1800
Schedule	lc
IdleTime	1800
CheckType	https
CheckURL	/hosting/discovery
CheckUse1.1	1
CheckUseGet	1

## Director Reverse Proxy

### Director Reverse Proxy

The Skype Director Reverse Proxy template contains two Virtual Services:

- Skype Director Reverse Proxy - HTTP
- Skype Director Reverse Proxy - HTTPS

### Deploy Director Reverse Proxy Template

To add the Virtual Services for Skype for Business Director with the template, follow the steps below:

1. Click the **Add New** button.

Please Specify the Parameters for the Virtual Service.

Virtual Address	<input type="text" value="192.168.10.242"/>
Port	<input type="text" value="80"/>
Service Name (Optional)	<input type="text" value="Skype Director Reverse"/>
Use Template	<input type="text" value="Skype Director Reverse Proxy"/>
Protocol	<input type="text" value="tcp"/>

2. Enter a **Virtual Address**.
3. Select the **Skype Director Reverse Proxy** template in the **Use Template** drop-down list.



- Click **Add This Virtual Service**.

## Configure Director Reverse Proxy HTTP Virtual Service

To configure the Skype Director Reverse Proxy - HTTP Virtual Service, follow the steps below:

- Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Director Reverse Proxy - HTTP	L7	<div><div></div>Down</div>	<div><div>Modify</div><div>Delete</div></div>
Skype Director Reverse Proxy - HTTPS	L7	<div><div></div>Down</div>	<div><div>Add New</div><div><div>Modify</div><div>Delete</div></div></div>

- Click **Modify** on the Skype Director Reverse Proxy - HTTP Virtual Service.
- Expand the **Real Servers** section.
- Click **Add New**.
- Enter the **Real Server Address**.
- Confirm that **Port 8080** is entered.
- Click **Add This Real Server**.

**Note:** Ensure to not use **80** as the Real Server **Port**.

- Add additional Real Servers as needed.

## Director Reverse Proxy HTTP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	80
prot	tcp
ForceL7	1
Transparent	0
Persistent	none
Schedule	lc
Idletime	1800
CheckType	tcp
CheckPort	5061

**Note:** Ensure to not use **80** as the Real Server **Port**.

## Configure Director Reverse Proxy HTTPS Virtual Service

To configure the Skype Director Reverse Proxy - HTTPS Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Director Reverse Proxy - HTTP	L7	<span style="color: red;">●</span> Down	<a href="#">Modify</a> <a href="#">Delete</a>
Skype Director Reverse Proxy - HTTPS	L7	<a href="#">Add New</a> <span style="color: red;">●</span> Down	<a href="#">Modify</a> <a href="#">Delete</a>

2. Click **Modify** on the **Skype Director Reverse Proxy - HTTPS** Virtual Service.
3. Expand the **SSL Properties** section.

**SSL Properties**

SSL Acceleration Enabled: ☒ Reencrypt: ☐

Supported Protocols ☐ SSLv3 ☐ TLS1.0 ☐ TLS1.1 ☒ TLS1.2 ☒ TLS1.3

Add Received Cipher Name ☐

Require SNI hostname ☐

---

Self Signed Certificate in use.

Available Certificates: None Available

Assigned Certificates: None Assigned

[Set Certificates](#)

[Manage Certificates](#)

---

Cipher Set: Default [Modify Cipher Set](#)

Assigned Ciphers:

- ECDHE-ECDSA-AES256-GCM-SHA384
- ECDHE-RSA-AES256-GCM-SHA384
- DHE-DSS-AES256-GCM-SHA384
- DHE-RSA-AES256-GCM-SHA384
- ECDHE-ECDSA-CHACHA20-POLY1305
- ECDHE-RSA-CHACHA20-POLY1305

TLS1.3 Ciphersets:

- ☒ TLS\_AES\_256\_GCM\_SHA384 ☒ TLS\_CHACHA20\_POLY1305\_SHA256 ☒ TLS\_AES\_128\_GCM\_SHA256
- ☐ TLS\_AES\_128\_CCM\_8\_SHA256 ☐ TLS\_AES\_128\_CCM\_SHA256

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Client Certificates: No Client Certificates required

Strict Transport Security Header: Don't add the Strict Transport Security Header

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Intermediate Certificates: Using all installed intermediate certificates

[Show Intermediate Certificates](#)

4. Select a valid certificate which was previously imported and click the > button to assign the certificate.
5. Click **Set Certificates**.
6. Expand the **Real Servers** section.
7. Click **Add New**.
8. Enter the **Real Server Address**.
9. Confirm that **Port 4443** is entered.
10. Click **Add This Real Server**.

**Note:** Ensure to not use **443** as the Real Server **Port**.

11. Add additional Real Servers as needed.

## Director Reverse Proxy HTTPS Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp
SSLAcceleration	1
SSLReencrypt	1
Persist	none
Schedule	lc
Idletime	1800
CheckType	tcp
CheckPort	5061

**Note:** Ensure to not use **443** as the Real Server **Port**.

## Front End Reverse Proxy

### Front End Reverse Proxy

The Skype for Business 2015 Front End Reverse Proxy template contains two Virtual Services:

- Skype Front End Reverse Proxy - HTTP
- Skype Front End Reverse Proxy - HTTPS

### Deploy Front End Reverse Proxy Template

To add the Virtual Services for Skype Front End Reverse Proxy with the template, follow the steps below:

1. Click the **Add New** button.

## Please Specify the Parameters for the Virtual Service.

Virtual Address	<input type="text" value="192.168.10.229"/>
Port	<input type="text" value="80"/>
Service Name (Optional)	<input type="text" value="Skype Front End Reverse Proxy"/>
Use Template	<input type="text" value="Skype Front End Reverse Proxy"/>
Protocol	<input type="text" value="tcp"/>

2. Enter a **Virtual Address**.
3. Select the **Skype For Business 2015 Front End Reverse Proxy** template in the **Use Template** drop-down list.
4. Click **Add This Virtual Service**.

## Configure Front End Reverse Proxy HTTP Virtual Service

To configure the Skype Front End Reverse Proxy - HTTP Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Front End Reverse Proxy - HTTP	L7	<div><div></div>Down</div>	<div>ModifyDelete</div>
Skype Front End Reverse Proxy - HTTPS	L7	<div><div></div>Down</div>	<div>Add NewModifyDelete</div>

2. Click **Modify** on the **Skype Front End Reverse Proxy - HTTP** Virtual Service.
3. Expand the **Real Servers** section.
4. Click **Add New**.
5. Enter the **Real Server Address**.
6. Confirm that **Port 8080** is entered.
7. Click **Add This Real Server**.

**Note:** Ensure to not use **80** as the Real Server **Port**.

8. Add additional Real Servers as needed.

## Front End Reverse Proxy HTTP Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	80
prot	tcp

API Parameter	API Value
ForceL7	1
Transparent	0
Persist	none
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

**Note:** Ensure to not use **80** as the Real Server **Port**.

## Configure Front End Reverse Proxy HTTPS Virtual Service

To configure the Skype Front End Reverse Proxy - HTTPS Virtual Service, follow the steps below:

1. Select **View/Modify Services** under **Virtual Services** in the left-hand navigation.

Skype Front End Reverse Proxy - HTTP	L7	● Down	Modify Delete
Skype Front End Reverse Proxy - HTTPS	L7	Add New ● Down	Modify Delete

2. Click **Modify** on the **Skype Front End Reverse Proxy - HTTPS** Virtual Service.
3. Expand the **SSL Properties** section.

4. Select a valid certificate which was previously imported and click the > button to assign the certificate.
5. Click **Set Certificates**.
6. Expand the **Real Servers** section.
7. Click **Add New**.
8. Enter the **Real Server Address**.
9. Confirm that **Port 4443** is entered.
10. Click **Add This Real Server**.

**Note:** Ensure to not use **443** as the Real Server **Port**.

11. Add additional Real Servers as needed.

## Front End Reverse Proxy HTTPS Virtual Service Recommended API Settings (optional)

This table outlines the API parameters and values set using the Progress Kemp application template. These settings can be used with scripts and automation tools.

API Parameter	API Value
port	443
prot	tcp
SSLAcceleration	1

API Parameter	API Value
SSLReencrypt	1
Persist	none
Schedule	lc
IdleTime	1800
CheckType	tcp
CheckPort	5061

---

**Note:** Ensure to not use **443** as the Real Server **Port**.

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## Additional Information

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### Additional Information

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

#### Related Links

- [Server Maintenance](#)
- [Loss of Failover while using DNS](#)
- [Hardware Load Balancing](#)

## Server Maintenance

### 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.

## Loss of Failover while using DNS

### 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

## Hardware Load Balancing

### 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 link below for further information on hardware load balancing: <https://technet.microsoft.com/en-us/library/gg615011.aspx>

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# References

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## References

The following sources are referred to in this document:

**Progress Kemp website**

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

**Progress Kemp Documentation page**

<https://docs.progress.com/>

**Web User Interface (WUI), Configuration Guide**

<https://docs.progress.com/>

**Virtual Services and Templates, Feature Description**

<https://docs.progress.com/>

**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>