



VMware Unified Access Gateway

Deployment Guide

UPDATED: 27 July 2023

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1 Introduction

Access Point is a Unified Gateway from VMware that comes in virtual appliance format and is designed to protect desktop and application resources to enable remote access from the Internet. Access Point is the default gateway for the following products:

- VMware Horizon View
- VMware Horizon Air (DaaS)
- VMware Horizon Air Hybrid-Mode
- VMware Identity Manager
- Airwatch Tunnel Gateway/Proxy

The Kemp LoadMaster is used to load balance the VMware Access Point workload. The LoadMaster offers advanced Layer 4 and Layer 7 server load balancing, SSL Acceleration and a multitude of other advanced Application Delivery Controller (ADC) features. The LoadMaster intelligently and efficiently distributes user traffic among the application servers so that users get the best experience possible.

1.1 Document Purpose

This document provides the recommended LoadMaster settings used when load balancing the VMware Access Point workload for the Horizon View and Horizon Air Hybrid-Mode use cases. The Kemp Support Team is available to provide solutions for scenarios not explicitly defined. The Kemp support site can be found at: <https://support.kemptechnologies.com>

1.2 Intended Audience

This document is intended to be read by anyone who is interested in configuring the LoadMaster to optimize VMware Access Point Server.

1.3 About this Document

This document was written with help from Mark Benson and Vish Kalsi of VMware. Some of the content in this document is based on the following VMware document:
<https://communities.vmware.com/docs/DOC-32792>

In addition, you can find more information at <https://www.vmware.com/support/pubs/access-point-pubs.html>

2 Template

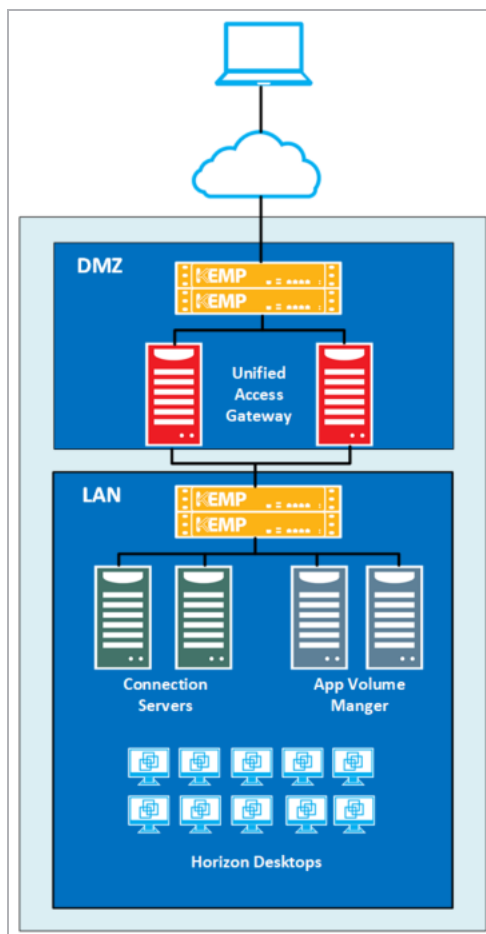
Kemp has developed a template containing our recommended settings for this workload. You can install this template to help create Virtual Services (VSs) because it automatically populates the settings. You can use the template to easily create the required VSs with the recommended settings. You can remove 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](#).

3 Architecture

The VMware Horizon View 7 recommended architecture includes multiple Unified Access Gateway appliances deployed in the DMZ, multiple Connection Servers and App Volume Managers deployed on the internal LAN.



This deployment guide focuses on the load balancing requirements for the Horizon View and Horizon Air Hybrid-Mode use cases. It discusses the distinction between the primary and secondary Horizon protocols and describes the three methods for guaranteeing session affinity. The three methods ensure that all protocol traffic from a Horizon client session goes to the same Unified Access Gateway appliance. This article also covers health monitoring and SSL offload/SSL bridging for load balancers.

4 Horizon Protocols

When a Horizon Client user connects to a Horizon environment, several different protocols are used. The first connection is always the primary XML-API protocol over HTTPS. Following successful authentication, one or more secondary protocols are also made.

4.1 Primary Horizon Protocol

The user enters a hostname at the Horizon Client and this starts the primary Horizon protocol. This is a control protocol for authentication, authorization and session management. It uses XML-structured messages over HTTPS (HTTP over SSL). This protocol is sometimes known as the Horizon XML-API control protocol. In a load-balanced environment as shown in the **Architecture** section, the load balancer routes this connection to one of the Access Point appliances. The load balancer usually selects the appliance based first on availability, and then out of the available appliances will route traffic based on the least number of current sessions. This has the effect of evenly distributing the traffic from different clients across the available set of Access Point appliances.

4.2 Secondary Horizon Protocols

After the Horizon Client has established a secure communication to one of the Access Point appliances, the user authenticates. If this authentication attempt is successful, then one or more secondary connections are made from the Horizon client. These secondary connections can include:

- HTTPS Tunnel used for encapsulating TCP protocols such as RDP, MMR/CDR and the client framework channel (TCP 443).
- Blast Extreme display protocol (TCP 443 and UDP 443).
- PCoIP display protocol (TCP 4172 and UDP 4172).

These secondary Horizon protocols must be routed to the same Access Point appliance to which the primary Horizon protocol is routed. This is so that Access Point can authorize the secondary protocols based on the authenticated user session. An important security capability of Access Point is that it will only forward traffic into the corporate datacenter if the traffic is on behalf of an authenticated user. If the secondary protocols were to be misrouted to a different Access Point appliance to the primary protocol one, they would not be authorized and would therefore be dropped in the DMZ and the connection would fail. Misrouting the secondary protocols is a common problem if the Load Balancer is not configured correctly.

5 Configure the LoadMaster

The deployed VMware Access Point environment determines which of the following setups is used.

5.1 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.

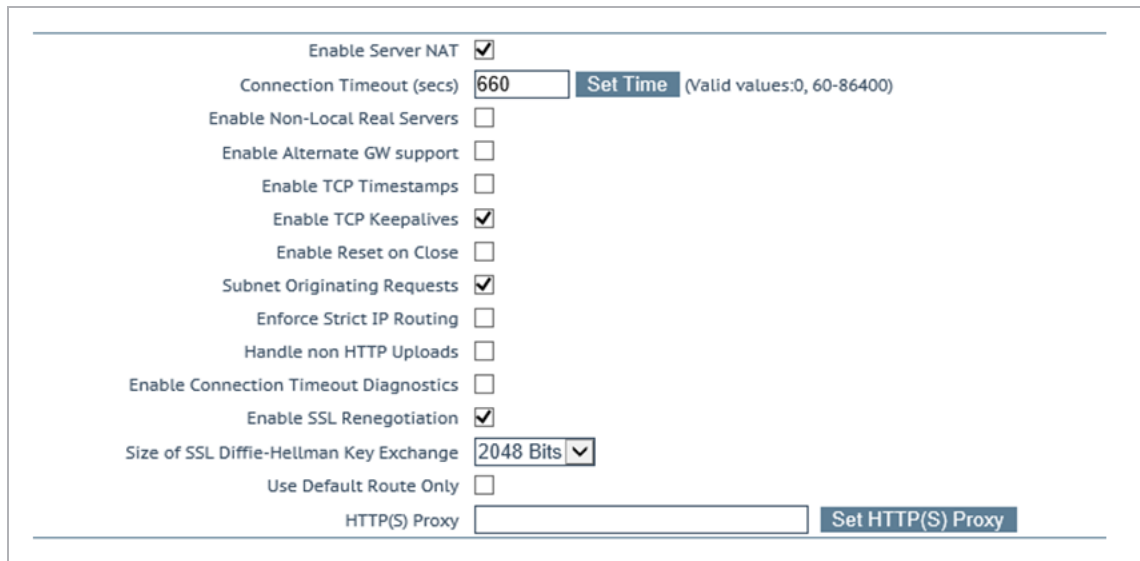
When **Subnet Originating Requests** is enabled, the LoadMaster routes traffic so that the Real Server sees traffic arriving from the LoadMaster interface that is in that network/subnet.

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 Web User Interface (WUI), go to **System Configuration > Miscellaneous Options > Network Options**.

5 Configure the LoadMaster



The screenshot shows a configuration window with the following settings:

Setting	Value
Enable Server NAT	<input checked="" type="checkbox"/>
Connection Timeout (secs)	660
Enable Non-Local Real Servers	<input type="checkbox"/>
Enable Alternate GW support	<input type="checkbox"/>
Enable TCP Timestamps	<input type="checkbox"/>
Enable TCP Keepalives	<input checked="" type="checkbox"/>
Enable Reset on Close	<input type="checkbox"/>
Subnet Originating Requests	<input checked="" type="checkbox"/>
Enforce Strict IP Routing	<input type="checkbox"/>
Handle non HTTP Uploads	<input type="checkbox"/>
Enable Connection Timeout Diagnostics	<input type="checkbox"/>
Enable SSL Renegotiation	<input checked="" type="checkbox"/>
Size of SSL Diffie-Hellman Key Exchange	2048 Bits
Use Default Route Only	<input type="checkbox"/>
HTTP(S) Proxy	

Buttons: Set Time, Set HTTP(S) Proxy

2. Select the **Subnet Originating Requests** check box.

5.2 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**.

5 Configure the LoadMaster

Enable Server NAT	<input checked="" type="checkbox"/>
Connection Timeout (secs)	<input type="text" value="660"/> Set Time (Valid values:0, 60-86400)
Enable Non-Local Real Servers	<input type="checkbox"/>
Enable Alternate GW support	<input type="checkbox"/>
Enable TCP Timestamps	<input type="checkbox"/>
Enable TCP Keepalives	<input checked="" type="checkbox"/>
Enable Reset on Close	<input type="checkbox"/>
Subnet Originating Requests	<input checked="" type="checkbox"/>
Enforce Strict IP Routing	<input type="checkbox"/>
Handle non HTTP Uploads	<input type="checkbox"/>
Enable Connection Timeout Diagnostics	<input type="checkbox"/>
Legacy TCP Timewait handling	<input type="checkbox"/>
Enable SSL Renegotiation	<input checked="" type="checkbox"/>
Force Real Server Certificate Checking	<input type="checkbox"/>
Size of SSL Diffie-Hellman Key Exchange	<input type="text" value="2048 Bits"/>
Log SSL errors	<input type="text" value="Fatal errors only"/>
Use Default Route Only	<input type="checkbox"/>
HTTP(S) Proxy	<input type="text"/> Set HTTP(S) Proxy

2. Click the **Always Check Persist** drop-down arrow and select **Yes – Accept Changes**.

6 Session Affinity Options

There are three main configuration options for session affinity. These are:

- Source IP Affinity
- Multiple Port Number Groups
- Multiple VIPs

6.1 Method 1 - Source IP Affinity

Method 1 is recommended for all environments where source IP address affinity is possible. Where it is not possible, then either method 2 or method 3 should be used.

Method 1 is the simplest configuration for a load balancer because it uses standard port numbers and a single load balanced VIP. It relies on the load balancer to route secondary protocols to the same Access Point appliance as was selected for the primary Horizon protocol. It does this on the basis of repeat connections coming from the same Horizon client IP address. Unfortunately, this method does not work in all situations. For example, with certain Network Service Providers or NAT devices, the source IP address is not available for this affinity configuration. If source IP affinity cannot be used in your environment, then one of the other two methods should be used as they do not rely on source IP affinity.

Access Point Configuration for External URLs for this configuration is shown in the following table.

In our example, the Fully Qualified Domain Name (FQDN) `http://ap.myco.com` resolves to `10.1.160.35`.

Access Point Appliance	Configuration Item	Value
AP01	tunnelExternalURL	https://ap.myco.com:443
AP01	blastExternalURL	https://ap.myco.com:443
AP01	pcoipExternalURL	10.1.160.35:4172
AP02	tunnelExternalURL	https://ap.myco.com:443
AP02	blastExternalURL	https://ap.myco.com:443
AP02	pcoipExternalURL	10.1.160.35:4172

Advantages of Source IP Affinity

- Uses standard port numbers
- Does not require multiple public virtual IP addresses

Disadvantages of Source IP Affinity

- Relies on source IP address affinity, which is not always possible.

6.1.1 Create the VMware Access Point Source IP Affinity Virtual Services

The following sections describe the recommended settings for the VMware Access Point Source IP Affinity Virtual Services.

6.1.1.1 Create a APLB TCP-IP Affinity Virtual Service

The following are the steps involved and the recommended settings to configure the APLB TCP-IP Affinity HTTP Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Select a Template

Protocol

tcp

Cancel

Add this Virtual Service

2. Type a valid **Virtual Address**.
3. Type **443** as the **Port**.
4. Enter a recognizable **Service Name**, such as **APLB TCP-IP Affinity**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

6 Session Affinity Options

Section	Option	Value	Comment
Standard Options	Extra Ports	4172	Click Set Extra Ports.
	Persistence Mode	Source IP Address	
	Timeout	6 minutes	
	Scheduling Method	least connection	
Advanced Properties	Add a Port 80 Redirector VS		Click the Add HTTP Redirector button. This automatically creates a redirect on port 80.
Real Servers	Real Server Check Method	HTTPS Protocol	
	URL	/favicon.ico	

7. Add the Real Servers:

- a) Expand the **Real Servers** section.
- b) Click **Add New**.
- c) Type the address of the relevant Real Server.
- d) Complete the other fields as required.
- e) Click **Add this Real Server** then click **OK** to the pop-up message.
- f) Repeat the steps above to add more Real Servers as needed, based on your environment.

Create an APLB TCP-IP Affinity HTTPS HTTP Redirect Virtual Service

Clicking the **Add HTTP Redirector** button automatically creates a port 80 redirect Virtual Service. This is optional, but the purpose of this Virtual Service is to redirect any clients who have connected using HTTP to the HTTPS Virtual Service.

6.1.1.2 Create an APLB UDP 443 Affinity Virtual Service

The following are the steps involved and the recommended settings to configure the APLB UDP 443 Affinity Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Select a Template

Protocol

udp

Cancel

Add this Virtual Service

2. Type a valid **Virtual Address**.
3. Type **443** as the **Port**.
4. Enter a recognizable **Service Name**, such as **APLB UDP 443 Affinity**.
5. Select **udp** as the **Protocol**.
6. Click **Add this Virtual Service**.
7. Configure the settings as recommended in the following table:

Section	Option	Value
Standard Options	Force L4	Disabled
	Persistence Mode	Source IP Address
	Timeout	6 minutes
Advanced Properties	Port Following	tcp/10.1.160.35:443
Real Servers	Real Server Check Method	ICMP Ping

8. Add the Real Servers:
 - a) Expand the **Real Servers** section.
 - b) Click **Add New**.

- c) Type the address of the relevant Real Server.
- d) Complete the other fields as required.
- e) Click **Add this Real Server** then click **OK** to the pop-up message.
- f) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.1.1.3 Create an APLB - UDP 4172 - Affinity Virtual Service

The following are the steps involved and the recommended settings to configure the APLB - UDP 4172 - Affinity Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Protocol

2. Type a valid **Virtual Address**.
3. Type **4172** as the **Port**.
4. Enter a recognizable **Service Name**, such as **APLB - UDP 4172**.
5. Select **udp** as the **Protocol**.
6. Click Add this Virtual Service.
7. Configure the settings as recommended in the following table:

Section	Option	Value
Standard Options	Force L4	Disabled

Section	Option	Value
	Persistence Mode	Source IP Address
	Timeout	6 minutes
Advanced Properties	Port Following	tcp/10.1.160.35:443
Real Servers	Real Server Check Method	ICMP Ping

8. Add the Real Servers:

- Expand the **Real Servers** section.
- Click **Add New**.
- Type the address of the relevant Real Server.
- Complete the other fields as required.
- Click **Add this Real Server** then click **OK** to the pop-up message.
- Repeat the steps above to add more Real Servers as needed, based on your environment.

6.2 Method 2 - Multiple Port Number Groups

Multiple port group affinity does not rely on source IP address for affinity. Instead, the load balancer is configured to route the secondary Horizon protocols based on a group of unique port numbers assigned to each Access Point appliance. The primary Horizon protocol on HTTPS port 443 is load balanced to allocate the session to a specific Access Point appliance based on health and least loaded. The secondary connections are then routed to the correct Access Point appliance based on the following Load Balancer configuration table.

Virtual IP Address	Primary/Secondary	Protocol	Name	Real Servers
10.1.160.31:443	Primary	TCP	APLB - HTTPS	10.1.160.183:443
				10.1.160.184:443
10.1.160.31:10143	Secondary	TCP	AP01 - HTTPS	10.1.160.183:443
10.1.160.31:10143	Secondary	UDP	AP01 - BLAST-UDP	10.1.160.183:443
10.1.160.31:10172	Secondary	TCP	AP01 - PCOIP	10.1.160.183:4172

Virtual IP Address	Primary/Secondary	Protocol	Name	Real Servers
10.1.160.31:10172	Secondary	UDP	AP01 - PCOIP-UDP	10.1.160.183:4172
10.1.160.31:10243	Secondary	TCP	AP02 - HTTPS	10.1.160.184:443
10.1.160.31:10243	Secondary	UDP	AP02 - BLAST-UDP	10.1.160.184:443
10.1.160.31:10272	Secondary	TCP	AP02 - PCOIP	10.1.160.184:4172
10.1.160.31:10272	Secondary	UDP	AP02 - PCOIP-UDP	10.1.160.184:4172

The same port mapping scheme can be used for additional Access Point appliances 03 > 99. For example, we use the following mapping convention in this document for two access points:

- 10143 → AP01 443
- 10172 → AP01 4172
- 10243 → AP02 443
- 10272 → AP02 4172

The same convention is used for multiple access points:

- 10343 → AP03 443
- 10372 → AP03 4172

The Access Point Configuration for External URLs is shown below.

In our example, the FQDN <http://ap.myco.com> resolves to 10.1.160.31.

Access Point Appliance	Configuration Item	Value
AP01	tunnelExternalURL	https://ap.myco.com:10143
AP01	blastExternalURL	https://ap.myco.com:10143
AP01	pcoipExternalURL	10.1.60.31:10172
AP02	tunnelExternalURL	https://ap.myco.com:10243
AP02	blastExternalURL	https://ap.myco.com:10243
AP02	pcoipExternalURL	10.1.60.31:10272

Advantages of Multiple Port Number Groups

- Does not rely on source IP affinity

- Does not require multiple public virtual IP addresses

Disadvantages of Multiple Port Number Groups

- Uses non-standard port numbers from the Internet although the port numbers on the Access Point appliances themselves are standard.

6.2.1 Create the VMware Access Point Multiple Port Number Groups Virtual Services

The following sections describe the recommended settings for the VMware Access Point Multiple Port Number Groups Virtual Services.

6.2.1.1 Create a APLB – HTTPS – Multiple Ports Virtual Service

The following are the steps involved and the recommended settings to configure the APLB – HTTPS – Multiple Ports Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Select a Template

Protocol

tcp

Cancel

Add this Virtual Service

2. Type a valid **Virtual Address**.
3. Type **443** as the **Port**.
4. Enter a recognizable **Service Name**, such as **APLB – HTTPS Multiple Ports**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value	Comment
Advanced	Add a Port 80		Click the Add HTTP Redirector button. This

Section	Option	Value	Comment
Properties	Redirector VS		automatically creates a redirect on port 80.
Basic Properties	Service Type	Generic	
Standard Options	Persistence Mode	SSL Session ID	
	Timeout	6 minutes	
	Scheduling Method	least connection	
Real Servers	Real Server Check Method	HTTPS Protocol	
	URL	/favicon.ico	

7. Add the Real Servers:

- Expand the **Real Servers** section.
- Click **Add New**.
- Type the address of the relevant Real Server.
- Type **443** as the **Port** number.
- Complete the other fields as required.
- Click **Add this Real Server** then click **OK** to the pop-up message.
- Repeat the steps above to add more Real Servers as needed, based on your environment.

Create an APLB – HTTPS – Multiple Ports HTTPS HTTP Redirect Virtual Service

Clicking the **Add HTTP Redirector** button automatically creates a port 80 redirect Virtual Service. This is optional, but the purpose of this Virtual Service is to redirect any clients who have connected using HTTP to the HTTPS Virtual Service.

6.2.1.2 Create an AP01 – HTTPS – Multiple Ports Virtual Service

The following are the steps involved and the recommended settings to configure the AP01 – HTTPS – Multiple Ports Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Select a Template

Protocol

tcp

Cancel

Add this Virtual Service

2. Type a valid **Virtual Address**.
3. Type **10143** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP01 – HTTPS – Multiple Ports**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value
Basic Properties	Service Type	HTTP/HTTPS
Standard Options	Force L4	Disabled
Real Servers	Real Server Check Method	HTTPS Protocol
	Checked Port	443
	URL	/favicon.ico

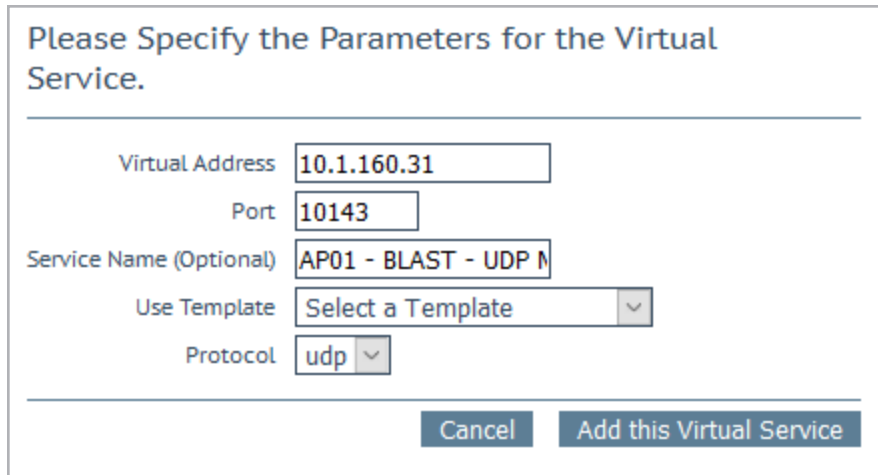
7. Add the Real Servers:
 - a) Expand the **Real Servers** section.
 - b) Click **Add New**.
 - c) Type the address of the relevant Real Server.
 - d) Type **443** as the **Port** number.

- e) Complete the other fields as required.
- f) Click **Add this Real Server** then click **OK** to the pop-up message.
- g) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.2.1.3 Create an AP01 – BLAST–UDP Multiple Ports Virtual Service

The following are the steps involved and the recommended settings to configure the AP01 – Blast-UDP Multiple Ports Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.



Please Specify the Parameters for the Virtual Service.

Virtual Address: 10.1.160.31

Port: 10143

Service Name (Optional): AP01 - BLAST - UDP N

Use Template: Select a Template

Protocol: udp

Buttons: Cancel, Add this Virtual Service

2. Type a valid **Virtual Address**.
3. Type **10143** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP01 – BLAST-UDP Multiple Ports**.
5. Select **udp** as the **Protocol**.
6. Click **Add this Virtual Service**.
7. Configure the settings as recommended in the following table:

Section	Option	Value
Standard Options	Force L4	Disabled
Real Servers	Real Server Check Method	ICMP Ping

8. Add the Real Servers:

- a) Expand the **Real Servers** section.
- b) Click **Add New**.
- c) Type the address of the relevant Real Server.
- d) Type **443** as the **Port**.
- e) Complete the other fields as required.
- f) Click **Add this Real Server** then click **OK** to the pop-up message.
- g) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.2.1.4 Create an AP01 – PCOIP Multiple Ports Virtual Service

The following are the steps involved and the recommended settings to configure the AP01 – PCOIP Multiple Ports Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Select a Template ▾

Protocol

tcp ▾

Cancel

Add this Virtual Service

2. Type a valid **Virtual Address**.
3. Type **10172** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP01 – PCOIP Multiple Ports**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value
Standard Options	Force L4	Disabled
Real Servers	Checked Port	4172

7. Add the Real Servers:

- Expand the **Real Servers** section.
- Click **Add New**.
- Type the address of the relevant Real Server.
- Type **4172** as the **Port**.
- Complete the other fields as required.
- Click **Add this Real Server** then click **OK** to the pop-up message.
- Repeat the steps above to add more Real Servers as needed, based on your environment.

6.2.1.5 Create an AP01 – PCOIP-UDP Multiple Ports Virtual Service

The following are the steps involved and the recommended settings to configure the AP01 – PCOIP-UDP Multiple Ports Virtual Service:

- In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Select a Template

▼

Protocol

udp

▼

Cancel

Add this Virtual Service

- Type a valid **Virtual Address**.

3. Type **10172** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP01 – PCOIP-UDP**.
5. Select **udp** as the **Protocol**.
6. Click **Add this Virtual Service**.
7. Configure the settings as recommended in the following table:

Section		Option	Value
Standard Options		Force L4	Disabled
Real Servers	Real Server Check Method	ICMP Ping	

8. Add the Real Servers:
 - a) Expand the **Real Servers** section.
 - b) Click **Add New**.
 - c) Type the address of the relevant Real Server.
 - d) Type **4172** as the **Port**.
 - e) Complete the other fields as required.
 - f) Click **Add this Real Server** then click **OK** to the pop-up message.
 - g) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.2.1.6 Create an AP02 – HTTPS Multiple Ports Virtual Service

The following are the steps involved and the recommended settings to configure the AP02 – HTTPS Multiple Ports Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Protocol

2. Type a valid **Virtual Address**.
3. Type **10243** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP02 – HTTPS**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value
Basic Properties	Service Type	HTTP/HTTPS
Standard Options	Force L4	Disabled
Real Servers	Real Server Check Method	HTTPS Protocol
	Checked Port	443
	URL	/favicon.ico

7. Add the Real Servers:
 - a) Expand the **Real Servers** section.
 - b) Click **Add New**.
 - c) Type the address of the relevant Real Server.
 - d) Type **443** as the **Port**.
 - e) Complete the other fields as required.

- f) Click **Add this Real Server** then click **OK** to the pop-up message.
- g) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.2.1.7 Create an AP02 – BLAST-UDP Multiple Ports Virtual Service

The following are the steps involved and the recommended settings to configure the AP02 – Blast-UDP Multiple Ports Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Protocol

2. Type a valid **Virtual Address**.
3. Type **10243** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP02 – BLAST-UDP**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value
Standard Options	Force L4	Disabled
Real Servers	Real Server Check Method	HTTPS Protocol

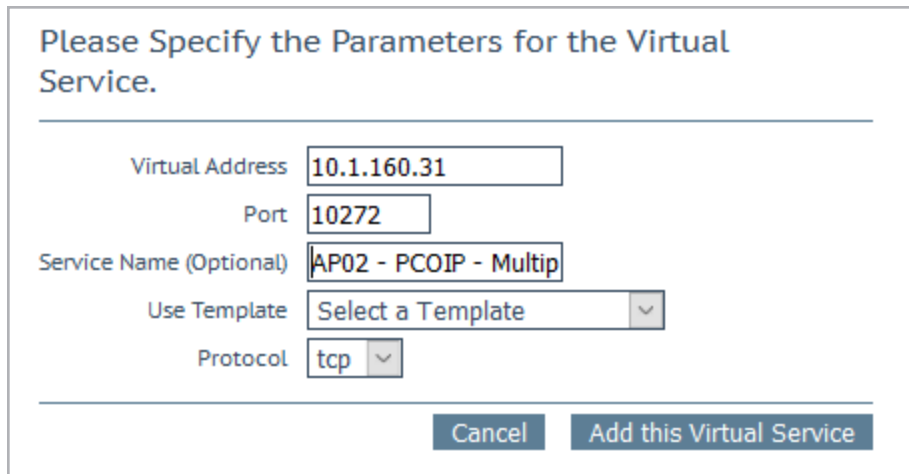
7. Add the Real Servers:
 - a) Expand the **Real Servers** section.

- b) Click **Add New**.
- c) Type the address of the relevant Real Server.
- d) Type **443** as the **Port**.
- e) Complete the other fields as required.
- f) Click **Add this Real Server** then click **OK** to the pop-up message.
- g) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.2.1.8 Create an AP02 – PCOIP Multiple Ports Virtual Service

The following are the steps involved and the recommended settings to configure the AP02 – PCOIP Multiple Ports Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.



Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Protocol

2. Type a valid **Virtual Address**.
3. Type **10272** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP02 – PCOIP**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value
Standard Options	Force L4	Disabled
	Scheduling Method	round robin
Real Servers	Checked Port	4172

7. Add the Real Servers:

- Expand the **Real Servers** section.
- Click **Add New**.
- Type the address of the relevant Real Server.
- Type **4172** as the **Port**.
- Complete the other fields as required.
- Click **Add this Real Server** then click **OK** to the pop-up message.
- Repeat the steps above to add more Real Servers as needed, based on your environment.

6.2.1.9 Create an AP02 – PCOIP-UDP Multiple Ports Virtual Service

The following are the steps involved and the recommended settings to configure the AP02 – PCOIP-UDP Multiple Ports Virtual Service:

- In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address	<input type="text" value="10.1.160.31"/>
Port	<input type="text" value="10272"/>
Service Name (Optional)	<input type="text" value="AP02 - PCOIP-UDP - M"/>
Use Template	<input type="text" value="Select a Template"/>
Protocol	<input type="text" value="udp"/>

2. Type a valid **Virtual Address**.
3. Type **10272** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP02 – PCOIP-UDP**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section		Option	Value
Standard Options		Force L4	Disabled
Real Servers	Real Server Check Method	ICMP Ping	

7. Add the Real Servers:
 - a) Expand the **Real Servers** section.
 - b) Click **Add New**.
 - c) Type the address of the relevant Real Server.
 - d) Type **4172** as the **Port**.
 - e) Complete the other fields as required.
 - f) Click **Add this Real Server** then click **OK** to the pop-up message.
 - g) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.3 Method 3 - Multiple VIPs

This method is similar to the multiple port groups method except instead of dedicating a group of port numbers to each Access Point appliance, it dedicates an individual VIP to each appliance in addition to the primary load balanced VIP. If you have two Access Point appliances, then you would set up three VIPs. The primary Horizon protocol on HTTPS port 443 is load balanced to allocate the session to a specific Access Point appliance based on health and least loaded. The secondary connections are then routed to the correct Access Point appliance based on the following Load Balancer configuration table.

Access Point Configurations for External URLs for this configuration are shown in the following table.

Virtual IP Address	Primary/Secondary	Protocol	Name	Real Servers
10.1.160.32:443	Primary	TCP	APLB - HTTPS	10.1.160.186:443 10.1.160.187:443
10.1.160.33:443	Secondary	TCP	AP01 - HTTPS	10.1.160.186:443
10.1.160.33:443	Secondary	UDP	AP01 - BLAST-UDP	10.1.160.186:443
10.1.160.33:4172	Secondary	TCP	AP01 - PCOIP	10.1.160.186:4172
10.1.160.33:4172	Secondary	UDP	AP01 - PCOIP-UDP	10.1.160.186:4172
10.1.160.34:443	Secondary	TCP	AP02 - HTTPS	10.1.160.187:443
10.1.160.34:443	Secondary	UDP	AP02 - BLAST-UDP	10.1.160.187:443
10.1.160.34:4172	Secondary	TCP	AP02 - PCOIP	10.1.160.187:4172
10.1.160.34:4172	Secondary	UDP	AP02 - PCOIP-UDP	10.1.160.187:4172

In our example, the FQDN `http://ap1.myco.com` resolves to 10.1.160.33 and `https://ap2.myco.com:4172` resolves to 10.1.160.34

Access Point Appliance	Configuration Item	Value
AP01	tunnelExternalURL	https://ap1.myco.com:443
AP01	blastExternalURL	https://ap1.myco.com:443
AP01	pcoipExternalURL	10.20.30.33:4172
AP02	tunnelExternalURL	https://ap2.myco.com:443
AP02	blastExternalURL	https://ap2.myco.com:4172
AP02	pcoipExternalURL	10.20.30.34:4172

Advantages of multiple VIPs

- Do not rely on source IP affinity
- Uses standard port numbers

Disadvantages of multiple VIPs

- Requires an additional public facing VIP for each Access Point appliance in addition to the primary load balanced VIP.

6.3.1 Create the Multiple VIPs Virtual Services

The following sections describe the recommended settings for the VMware Access Point Multiple VIPs Virtual Services.

6.3.1.1 Create an HTTPS-APLB Multiple VIPs Virtual Service

The following are the steps involved and the recommended settings to configure the HTTPS-APLB Multiple VIPs Virtual Service:

- 1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

10.1.160.32

Port

443

Service Name (Optional)

HTTPS - APLB - Multi

Use Template

Select a Template

Protocol

tcp

Cancel

Add this Virtual Service

- 2. Type a valid **Virtual Address**.
- 3. Type **443** as the **Port**.
- 4. Enter a recognizable **Service Name**, such as **HTTPS – APLB**.
- 5. Click **Add this Virtual Service**.
- 6. Configure the settings as recommended in the following table:

Section	Option	Value	Comment
Advanced Properties	Add a Port 80 Redirector VS		Click the Add HTTP Redirector button. This automatically creates a redirect on port 80.
Basic Properties	Service Type	Generic	

Section	Option	Value	Comment
Standard Options	Persistence Mode	SSL Session ID	
	Timeout	6 minutes	
	Scheduling Method	least connection	
Real Servers	Real Server Check Method	HTTPS Protocol	
	URL	/favicon.ico	

7. Add the Real Servers:

- a) Expand the **Real Servers** section.
- b) Click **Add New**.
- c) Type the address of the relevant Real Server.
- d) Complete the other fields as required.
- e) Click **Add this Real Server** then click **OK** to the pop-up message.
- f) Repeat the steps above to add more Real Servers as needed, based on your environment.

Create a HTTPS - APLB Multiple Ports HTTPS HTTP Redirect Virtual Service

Clicking the **Add HTTP Redirector** button automatically creates a port 80 redirect Virtual Service. This is optional, but the purpose of this Virtual Service is to redirect any clients who have connected using HTTP to the HTTPS Virtual Service.

6.3.1.2 Create an AP01 – BLAST-UDP Multiple VIPs Virtual Service

The following are the steps involved and the recommended settings to configure the AP01 – BLAST-UDP Multiple VIPs Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Select a Template

▼

Protocol

udp

▼

Cancel

Add this Virtual Service

2. Type a valid **Virtual Address**.
3. Type **443** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP01 – BLAST-UDP**.
5. Select **udp** as the **Protocol**.
6. Click **Add this Virtual Service**.
7. Configure the settings as recommended in the following table:

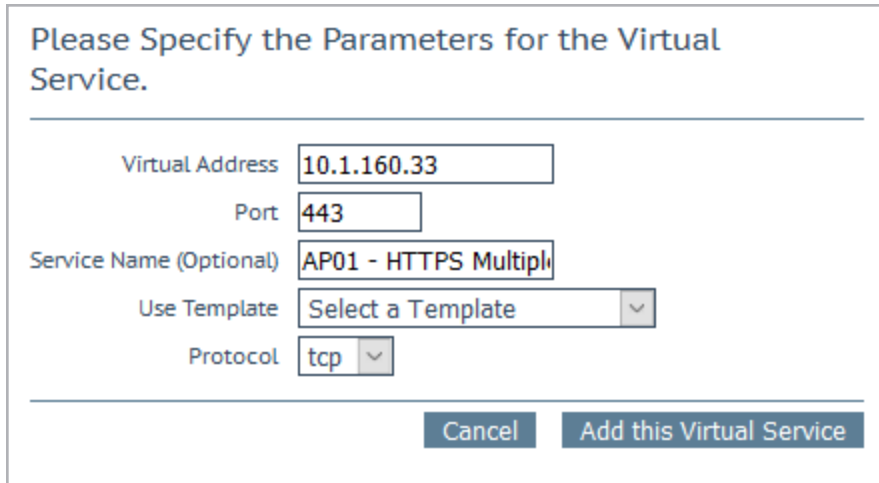
Section	Option	Value
Standard Options	Force L4	Disabled
Real Servers	Real Server Check Method	ICMP Ping

8. Add the Real Servers:
 - a) Expand the **Real Servers** section.
 - b) Click **Add New**.
 - c) Type the address of the relevant Real Server.
 - d) Complete the other fields as required.
 - e) Click **Add this Real Server** then click **OK** to the pop-up message.
 - f) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.3.1.3 Create an AP01 – HTTPS Multiple VIPs Virtual Service

The following are the steps involved and the recommended settings to configure the AP01 – HTTPS Multiple VIPs Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.



Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Protocol

2. Type a valid **Virtual Address**.
3. Type **443** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP01 – HTTPS**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value
Standard Options	Force L4	Disabled
	Scheduling Method	round robin
Real Servers	Real Server Check Method	HTTPS Protocol
	Checked Port	443
	URL	/favicon.ico

7. Add the Real Servers:
 - a) Expand the **Real Servers** section.

- b) Click **Add New**.
- c) Type the address of the relevant Real Server.
- d) Complete the other fields as required.
- e) Click **Add this Real Server** then click **OK** to the pop-up message.
- f) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.3.1.4 Create an AP01 - PCOIP Multiple VIPs Virtual Service

The following are the steps involved and the recommended settings to configure the AP01 - PCOIP Multiple VIPs Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Protocol

2. Type a valid **Virtual Address**.
3. Type **4172** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP01 - PCOIP**.
5. Click Add this **Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value	Comments
Real Servers	Real Server Check Method	TCP Connection only	

Section	Option	Value	Comments
	Checked Port	4172	Click Set Check Port.

7. Add the Real Servers:

- Expand the **Real Servers** section.
- Click **Add New**.
- Type the address of the relevant Real Server.
- Type **4172** as the **Port**.
- Complete the other fields as required.
- Click **Add this Real Server** then click **OK** to the pop-up message.
- Repeat the steps above to add more Real Servers as needed, based on your environment.

6.3.1.5 Create an AP01 – PCOIP-UDP Multiple VIPs Virtual Service

The following are the steps involved and the recommended settings to configure the AP01 – PCOIP-UDP Multiple VIPs Virtual Service:

- In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template ▼

Protocol ▼

- Type a valid **Virtual Address**.
- Type **4172** as the **Port**.

4. Enter a recognizable **Service Name**, such as **AP01 – PCOIP-UDP**.
5. Select **udp** as the **Protocol**.
6. Click **Add this Virtual Service**.
7. Configure the settings as recommended in the following table:

Section		Option	Value
Standard Options		Force L4	Disabled
Real Servers	Real Server Check Method	ICMP Ping	

8. Add the Real Servers:
 - a) Expand the **Real Servers** section.
 - b) Click **Add New**.
 - c) Type the address of the relevant Real Server.
 - d) Complete the other fields as required.
 - e) Click **Add this Real Server** then click **OK** to the pop-up message.
 - f) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.3.1.6 Create an AP02 – BLAST-UDP Multiple VIPs Virtual Service

The following are the steps involved and the recommended settings to configure the AP02 – BLAST-UDP Multiple VIPs Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Protocol

Cancel

Add this Virtual Service

2. Type a valid **Virtual Address**.
3. Type **443** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP02 – BLAST-UDP – Multiple IPs**.
5. Select **udp** as the **Protocol**.
6. Click **Add this Virtual Service**.
7. Configure the settings as recommended in the following table:

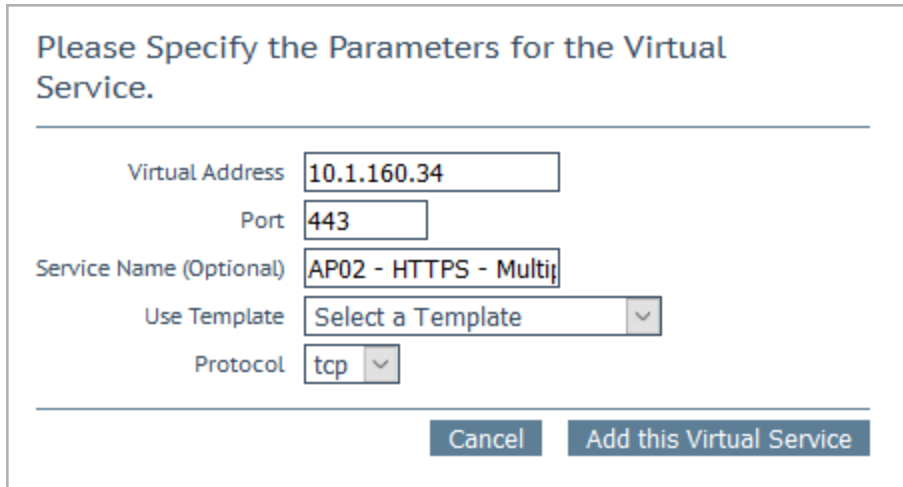
Section	Option	Value
Standard Options	Force L4	Disabled
Real Servers	Real Server Check Method	ICMP Ping

8. Add the Real Servers:
 - a) Expand the **Real Servers** section.
 - b) Click **Add New**.
 - c) Type the address of the relevant Real Server.
 - d) Complete the other fields as required.
 - e) Click **Add this Real Server** then click **OK** to the pop-up message.
 - f) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.3.1.7 Create an AP02 – HTTPS Multiple VIPs Virtual Service

The following are the steps involved and the recommended settings to configure the AP02 – HTTPS Multiple VIPs Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.



2. Type a valid **Virtual Address**.
3. Type **443** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP02 – HTTPS – Multiple IPs**.
5. Click Add this Virtual Service.
6. Configure the settings as recommended in the following table:

Section	Option	Value
Standard Options	Force L4	Disabled
Real Servers	Real Server Check Method	HTTPS Protocol
	Checked Port	443
	URL	/favicon.ico

7. Add the Real Servers:
 - a) Expand the **Real Servers** section.
 - b) Click **Add New**.

- c) Type the address of the relevant Real Server.
- d) Complete the other fields as required.
- e) Click **Add this Real Server** then click **OK** to the pop-up message.
- f) Repeat the steps above to add more Real Servers as needed, based on your environment.

6.3.1.8 Create an AP02 – PCOIP Multiple VIPs Virtual Service

The following are the steps involved and the recommended settings to configure the AP02 – PCOIP Multiple VIPs Virtual Service:

1. In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.

Please Specify the Parameters for the Virtual Service.

Virtual Address

Port

Service Name (Optional)

Use Template

Protocol

2. Type a valid **Virtual Address**.
3. Type **4172** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP02 – PCOIP**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section	Option	Value
Standard Options	Force L4	Disabled

6 Session Affinity Options

Section	Option	Value
Real Servers	Real Server Check Method	TCP Connection Only
	Checked Port	4172

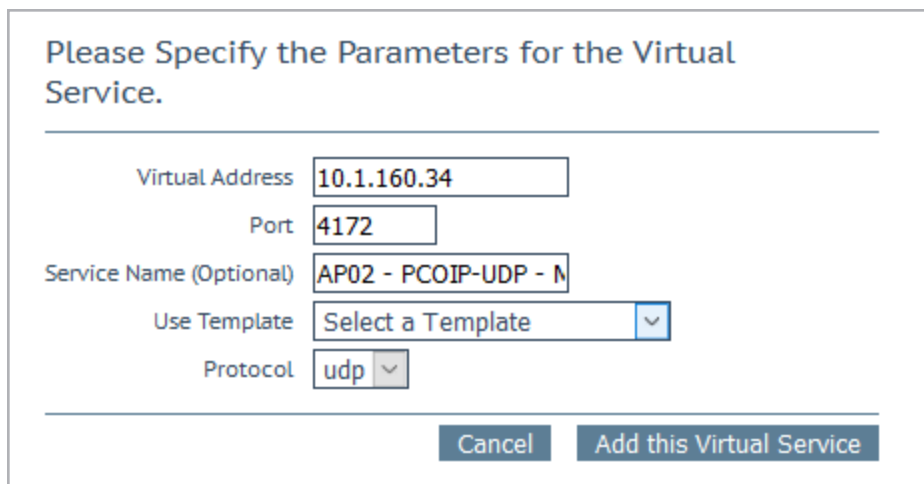
7. Add the Real Servers:

- Expand the **Real Servers** section.
- Click **Add New**.
- Type the address of the relevant Real Server.
- Complete the other fields as required.
- Click **Add this Real Server** then click **OK** to the pop-up message.
- Repeat the steps above to add more Real Servers as needed, based on your environment.

6.3.1.9 Create an AP02 – PCOIP-UDP Multiple VIPs Virtual Service

The following are the steps involved and the recommended settings to configure the **AP02 – PCOIP-UDP Multiple VIPs Virtual Service**:

- In the main menu of the LoadMaster Web User Interface (WUI), go to **Virtual Services > Add New**.



Please Specify the Parameters for the Virtual Service.

Virtual Address: 10.1.160.34

Port: 4172

Service Name (Optional): AP02 - PCOIP-UDP - N

Use Template: Select a Template

Protocol: udp

Buttons: Cancel, Add this Virtual Service

- Type a valid **Virtual Address**.

3. Type **4172** as the **Port**.
4. Enter a recognizable **Service Name**, such as **AP02 – PCOIP-UDP**.
5. Click **Add this Virtual Service**.
6. Configure the settings as recommended in the following table:

Section		Option	Value
Standard Options		Force L4	Disabled
Real Servers	Real Server Check Method	ICMP Ping	

7. Add the Real Servers:
 - a) Expand the **Real Servers** section.
 - b) Click **Add New**.
 - c) Type the address of the relevant Real Server.
 - d) Complete the other fields as required.
 - e) Click **Add this Real Server** then click **OK** to the pop-up message.
 - f) Repeat the steps above to add more Real Servers as needed, based on your environment.

References

Unless otherwise specified, the following documents can be found at <http://kemptechnologies.com/documentation>.

Virtual Services and Templates, Feature Description

Last Updated Date

This document was last updated on 27 July 2023.