# Load Balancing Nuance Output Manager

v1.1.1

*Deployment Guide*

loadbalancer.org

# Contents

# 1. About this Guide

This guide details the steps required to configure a load balanced Nuance Output Manager environment utilizing Loadbalancer.org appliances. It covers the configuration of the load balancers and also any Nuance Output Manager configuration changes that are required to enable load balancing.

For more information about initial appliance deployment, network configuration and using the Web User Interface (WebUI), please also refer to the relevant Administration Manual:

- v7 Administration Manual
- v8 Administration Manual

# 2. Loadbalancer.org Appliances Supported

All our products can be used for load balancing Nuance Output Manager. The complete list of models is shown below:

| Discontinued Models | Current Models * |
|---|---|
| Enterprise R16 | Enterprise R20 |
| Enterprise VA R16 | Enterprise MAX |
| Enterprise VA | Enterprise 10G |
| Enterprise R320 | Enterprise 40G |
| | Enterprise Ultra |
| | Enterprise VA R20 |
| | Enterprise VA MAX |
| | Enterprise AWS ** |
| | Enterprise AZURE ** |
| | Enterprise GCP ** |

* For full specifications of these models please refer to: http://www.loadbalancer.org/products/hardware

** Some features may not be supported, please check with Loadbalancer.org support

# 3. Loadbalancer.org Software Versions Supported

- V7.6.4 and later

# 4. Nuance Output Manager Software Versions Supported

- Nuance Output Manager – version 4.0 SP1 and later

# 5. Nuance Output Manager

Nuance Output Manager gives organizations control of what, when, and how they produce and deliver information. Output Manager is designed to route documents through a centralized system.

Nuance Output Manager consolidates input from multiple platforms and applications. It centrally manages resources and documents, and provides end-to-end tracking and reporting. Although documents traditionally travel directly from origin to destination, there are considerable benefits to routing them through a centralized system. Output Manager is therefore built around these main concepts:

- Maximize the number of sources from which you can receive documents
- Provide greater control over documents than can be found in other products
- Manage and expand the number of document destinations
- Ensure the security and integrity of documents throughout the send/receive cycle
- Produce a completely integrated audit trail and accounting functionality in order to monitor and control your costs
- Supply the tools necessary to convert document formats based upon the final destination
- Provide an observable process to a variety of audiences including administrators, print operators, end users, and management

# 6. Load Balancing Nuance Output Manager

> Note: It's highly recommended that you have a working Nuance Output Manager environment first before implementing the load balancer.

## Load Balancing & HA Requirements

The Output Manager components in a high availability environment require the following prerequisites to be installed and configured as per the Nuance Output Manager Installation Guide:

- Output Manager Core Server
- Output Manager Distributed Server
- Output Manager Web Server
- Output Manager Console
- Output Manager File Store
- Output Manager Web Client

## Persistence (aka Server Affinity)

Nuance Output Manager does not require session affinity at the load balancing layer, as the back end uses an SQL database to handle session state.

## Virtual Service (VIP) Requirements

To provide load balancing and HA for Product Name, the following VIPs are required:

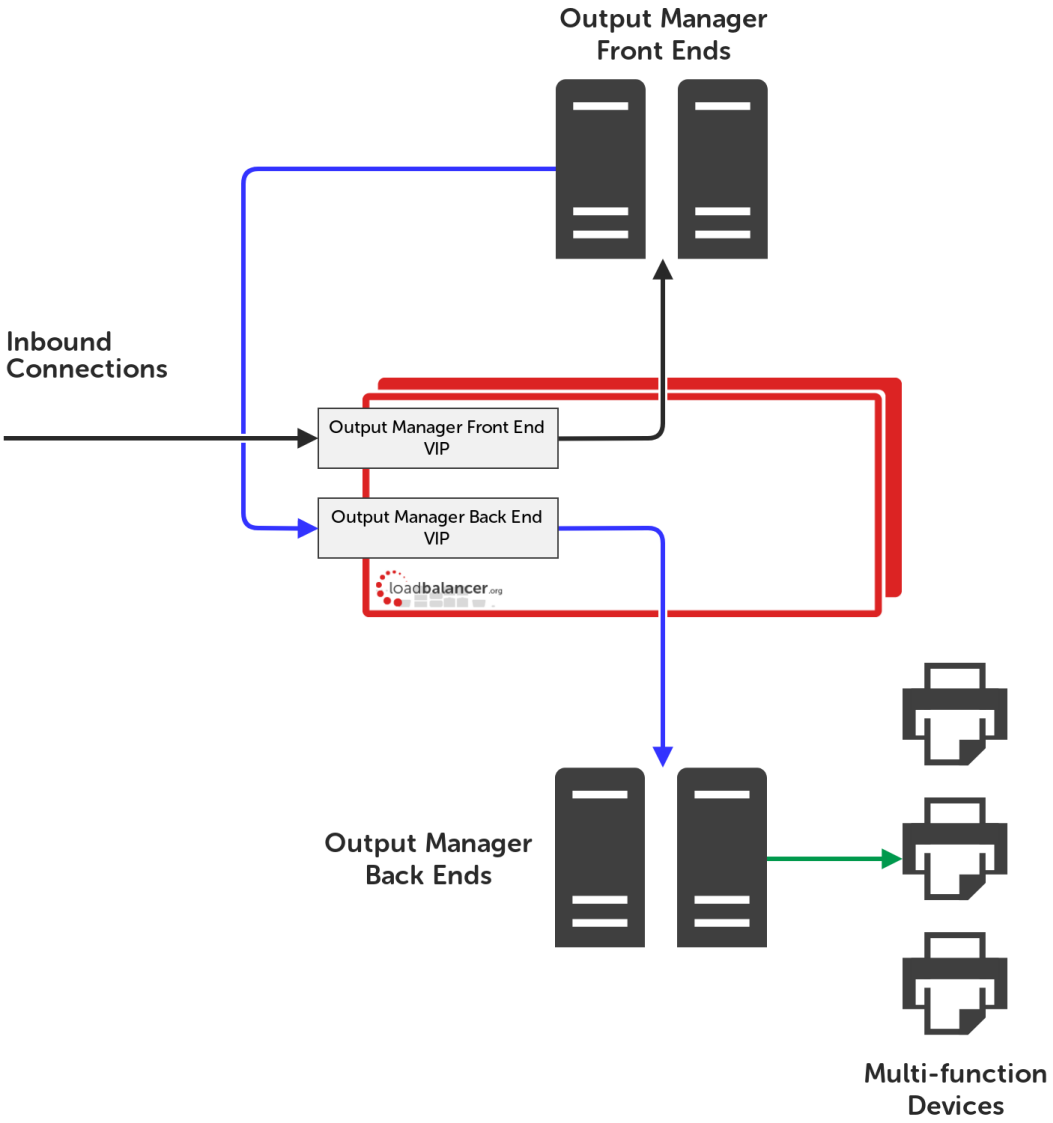
- Output Manager Front End
- Output Manager Back End (using either HTTP or HTTPS)

## Port Requirements

The following table shows the ports that are load balanced:

| Port | Protocols | Use |
|---|---|---|
| 445 | TCP/SMB | Output Manager front end |
| 8068 | TCP/HTTP | Output Manager back end over HTTP |
| 8069 | TCP/HTTPS | Output Manager back end over HTTPS |

# 7. Deployment Concept




VIPs = Virtual IP Addresses

Note: The load balancer can be deployed as a single unit, although Loadbalancer.org recommends a clustered pair for resilience & high availability. Please refer to section 3 in the appendix on page 30 for more details on configuring a clustered pair.

# 8. Load Balancer Deployment Methods

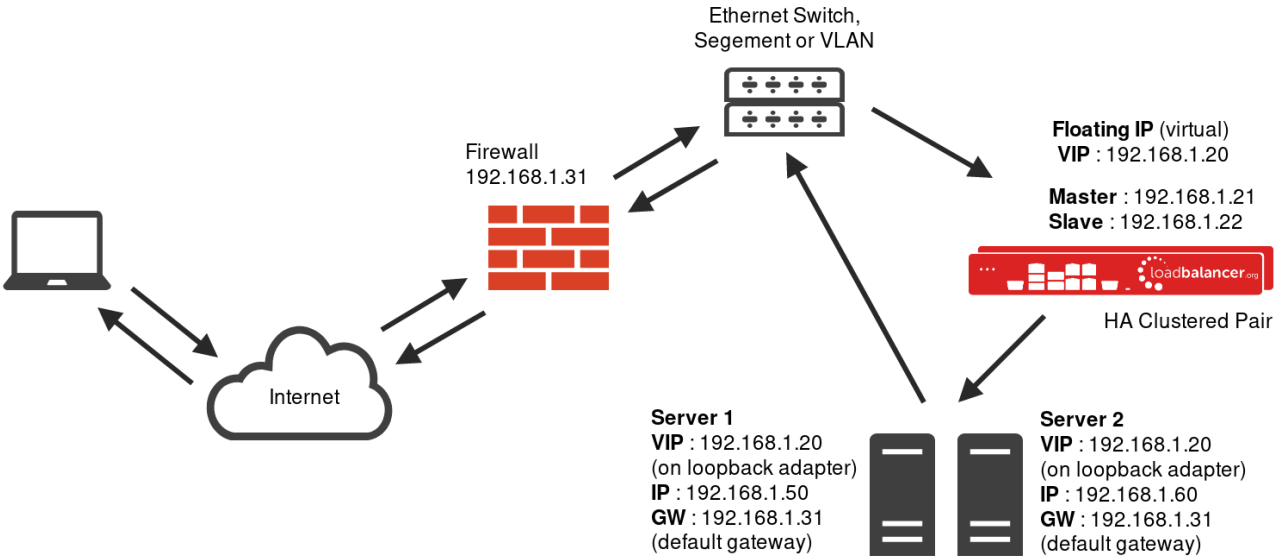
The load balancer can be deployed in 4 fundamental ways: *Layer 4 DR mode*, *Layer 4 NAT mode*, *Layer 4 SNAT mode* and *Layer 7 SNAT mode*.

For Nuance Output Manager, layer 4 DR mode and layer 7 SNAT mode are recommended. These modes are described below and are used for the configurations presented in this guide. For configuring using DR mode please refer to the section starting on page 15, and for configuring using layer 7 SNAT mode refer to the section starting on page 19.

## Layer 4 DR Mode

One-arm direct routing (DR) mode is a very high performance solution that requires little change to your existing infrastructure.

Note: Kemp, Brocade, Barracuda & A10 Networks call this Direct Server Return and F5 call it N-Path.



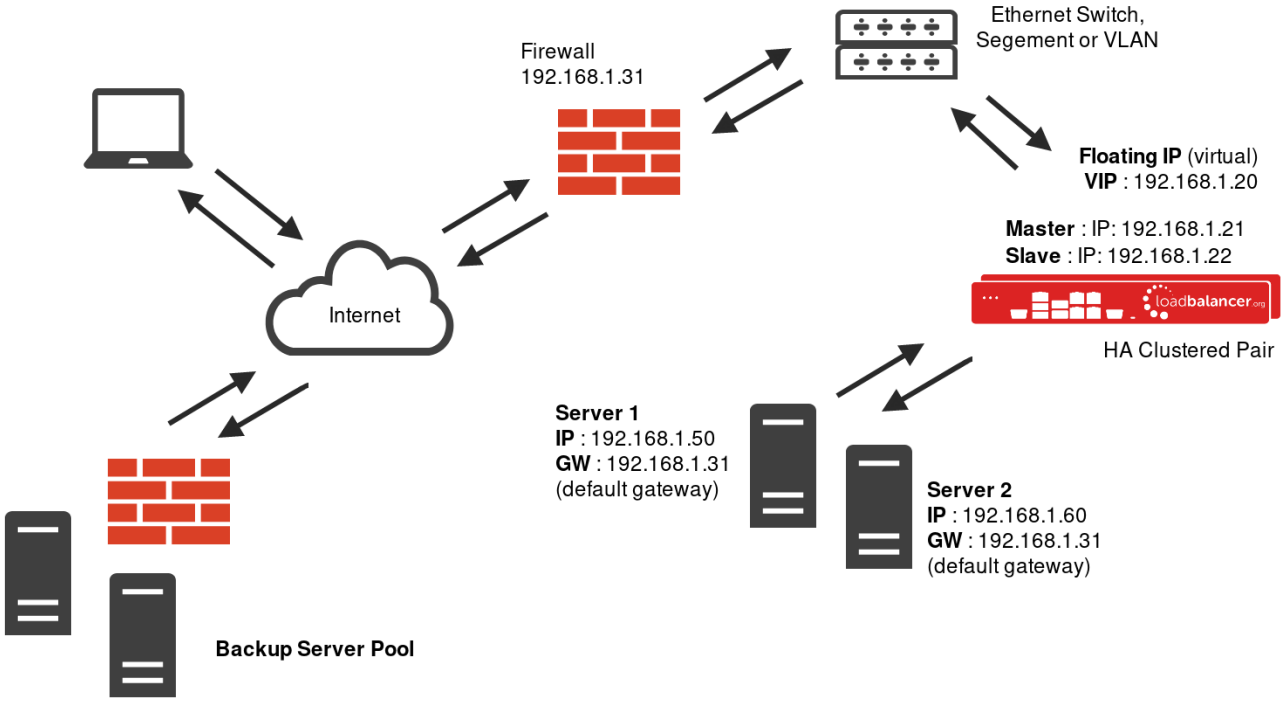

- DR mode works by changing the destination MAC address of the incoming packet to match the selected Real Server on the fly which is very fast
- When the packet reaches the Real Server it expects the Real Server to own the Virtual Services IP address (VIP). This means that you need to ensure that the Real Server (and the load balanced application) respond to both the Real Servers own IP address and the VIP
- The Real Server should not respond to ARP requests for the VIP. Only the load balancer should do this. Configuring the Real Servers in this way is referred to as *Solving the ARP Problem*. Please refer to page 25 for more information
- On average, DR mode is 8 times quicker than NAT for HTTP, 50 times quicker for Terminal Services and much, much faster for streaming media or FTP
- The load balancer must have an Interface in the same subnet as the Real Servers to ensure layer 2 connectivity required for DR mode to work
- The VIP can be brought up on the same subnet as the Real Servers, or on a different subnet provided that the

load balancer has an interface in that subnet

- Port translation is not possible in DR mode i.e. having a different RIP port than the VIP port
- DR mode is transparent, i.e. the Real Server will see the source IP address of the client

## Layer 7 SNAT Mode

Layer 7 SNAT mode uses a proxy (HAProxy) at the application layer. Inbound requests are terminated on the load balancer, and HAProxy generates a new request to the chosen Real Server. As a result, Layer 7 is a slower technique than DR or NAT mode at Layer 4. Layer 7 is typically chosen when either enhanced options such as SSL termination, cookie based persistence, URL rewriting, header insertion/deletion etc. are required, or when the network topology prohibits the use of the layer 4 methods.




This mode can be deployed in a one-arm or two-arm configuration and does not require any changes to the Real Servers. However, since the load balancer is acting as a full proxy it doesn't have the same raw throughput as the layer 4 methods.

The load balancer proxies the application traffic to the servers so that the source of all traffic becomes the load balancer.

- SNAT mode is a full proxy and therefore load balanced Real Servers do not need to be changed in any way
- Because SNAT mode is a full proxy any server in the cluster can be on any accessible subnet including across the Internet or WAN
- SNAT mode is not transparent by default, i.e. the Real Servers will not see the source IP address of the client, they will see the load balancers own IP address by default, or any other local appliance IP address if preferred (e.g. the VIP address), this can be configured per layer 7 VIP. If required, the clients IP address can be passed through either by enabling TProxy on the load balancer, or for HTTP, using X-forwarded-For headers. Please refer to chapter 6 in the administration manual for more details

- SNAT mode can be deployed using either a 1-arm or 2-arm configuration

### Our Recommendation

Where possible we recommend that Layer 4 Direct Routing (DR) mode is used. This mode offers the best possible performance since replies go directly from the Real Servers to the client, not via the load balancer. It's also relatively simple to implement. Ultimately, the final choice does depend on your specific requirements and infrastructure.

If DR mode cannot be used, for example if it is not possible to make changes to the real servers, or if the real servers are located in remote routed networks, then layer 7 SNAT mode is recommended.

## 9. Configuring Nuance Output Manager for Load Balancing

### Registry Modifications

For the print servers that are going to be load balanced, to enable them to be accessed via a shared name (**XeroxPrintService** is the example used in this guide), add the following registry entries to each print server:

**Key**: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Control\Lsa

**Value**: DisableLoopbackCheck

**Type**: REG_DWORD

**Data**: 1

**Key**: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\lanmanserver\parameters

**Value**: DisableStrictNameChecking

**Type**: REG_DWORD

**Data**: 1

**Key**: HKEY_LOCAL_MACHINE\SYSTEM\CurrentControlSet\Services\lanmanserver\parameters

**Value**: OptionalNames

**Type**: REG_MULTI_SZ

**Data**: XeroxPrintService

> Note: In the example presented here, XeroxPrintService is the name that will be used to access the load balanced print servers via the virtual service (VIP) created on the load balancer. This can be set to any appropriate name. Whatever name is used, it must resolve to the IP address of the VIP.

### Configuring Name Resolution

For printer load balancing to work, DNS name resolution should be configured. A host name and corresponding "Host

(A)" record for the virtual service should be created, and should match the virtual IP (VIP) address defined on the load balancer.

## Finalising the Configuration for Output Manager Back End Servers

To finalise the print server configuration changes, **each print server must be rebooted**.

In order to load balance Output Manager back end servers, Output Manager needs to be configured for high availability within the **Output Manager Server Configuration Utility**. This allows the user to select the **Use HA** check box where the user will be able to enter the associated load balancer virtual server IP address (VIP) or the DNS alias for the VIP created.

For further details on how to configure Output Manager back end servers please refer to page 37 of the 'Output Manager Installation Guide Version 4.0 SP2'.

> Note: Multi-function devices (MFDs) should be in the same group/folder in the Device Registration Service so that they inherit the same configuration.

## Layer 4 DR Mode – Solving the ARP Problem

If using layer 4 DR mode, the 'ARP problem' must be solved on each real server for DR mode to work. For detailed steps on solving the ARP problem for Windows, please refer to section 1 of the appendix on page 25 for more information.

For a detailed explanation of DR mode and the nature of the ARP problem, please refer to the section that covers layer 4 DR mode on page 8.

# 10. Loadbalancer.org Appliance – the Basics

## Virtual Appliance Download & Deployment

A fully featured, fully supported 30 day trial is available if you are conducting a PoC (Proof of Concept) deployment. The VA is currently available for VMware, Virtual Box, Hyper-V, KVM and XEN and has been optimized for each Hypervisor. By default, the VA is allocated 1 CPU, 2GB of RAM and has an 8GB virtual disk. The Virtual Appliance can be downloaded here.

> Note: The same download is used for the licensed product, the only difference is that a license key file (supplied by our sales team when the product is purchased) must be applied using the appliance's WebUI.

> Note: Please refer to the Administration Manual and the ReadMe.txt text file included in the VA download for more detailed information on deploying the VA using various Hypervisors.

## Initial Network Configuration

The IP address, subnet mask, default gateway and DNS settings can be configured in several ways as detailed below:

### *Method 1 - Using the Network Setup Wizard at the console*

After boot up, follow the instructions on the console to configure the IP address, subnet mask, default gateway and DNS settings.

### *Method 2 - Using the WebUI*

Using a browser, connect to the WebUI on the default IP address/port: **https://192.168.2.21:9443**

To set the IP address & subnet mask, use: *Local Configuration > Network Interface Configuration*

To set the default gateway, use: *Local Configuration > Routing*

To configure DNS settings, use: *Local Configuration > Hostname & DNS*

## Accessing the Web User Interface (WebUI)

The WebUI can be accessed via HTTPS at the following URL: **https://192.168.2.21:9443/lbadmin**

** Note the port number → 9443*

*(replace 192.168.2.21 with the IP address of your load balancer if it's been changed from the default)*

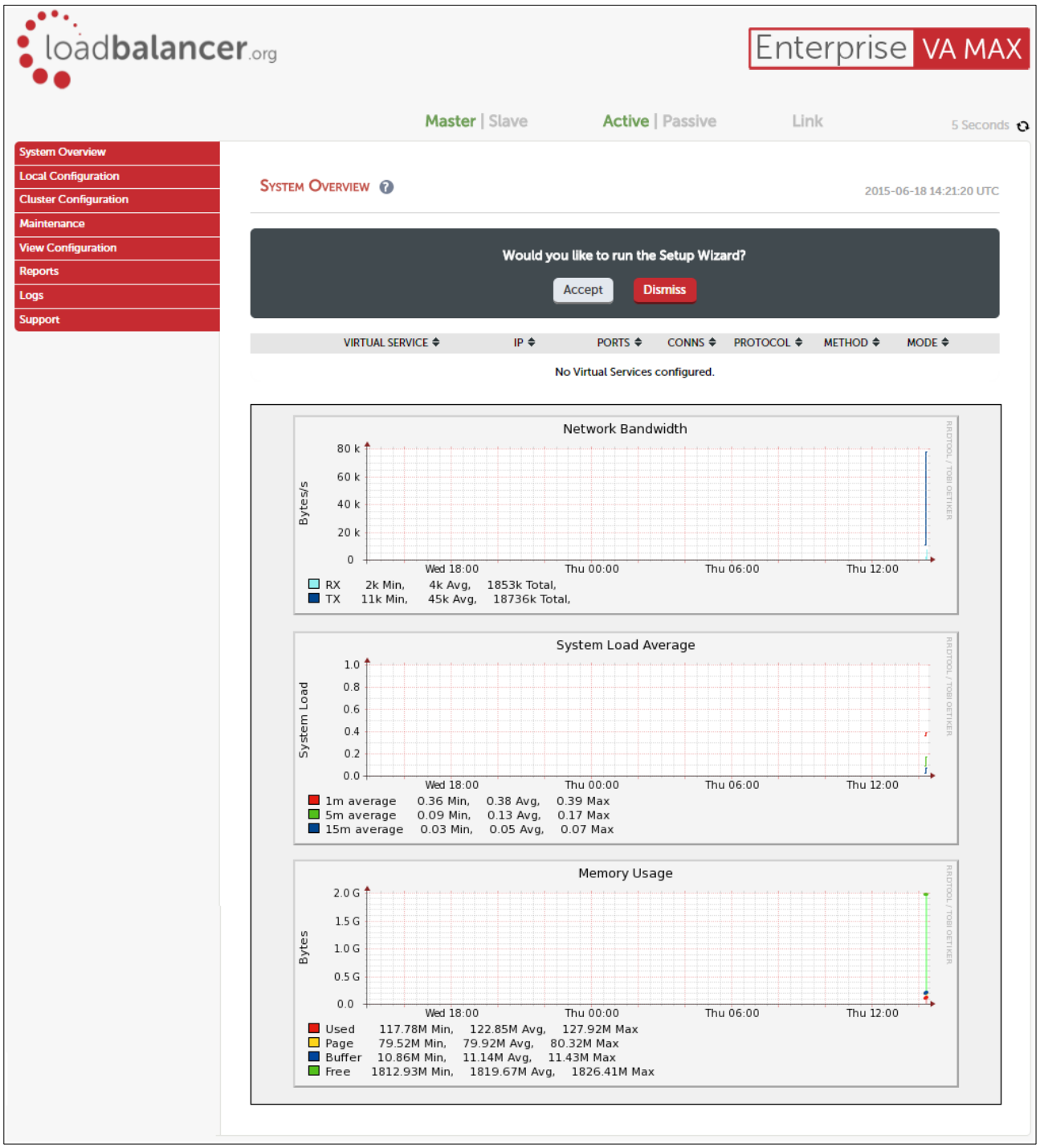
Login using the following credentials:

**Username:** loadbalancer

**Password:** loadbalancer

> Note: To change the password , use the WebUI menu option: Maintenance > Passwords.

Once logged in, the WebUI will be displayed as shown on the following page:




(shows v8.2.x)

## HA Clustered Pair Configuration

Loadbalancer.org recommend that load balancer appliances are deployed in pairs for high availability. In this guide a single unit is deployed first, adding a secondary slave unit is covered in section 3 of the appendix on page 30.

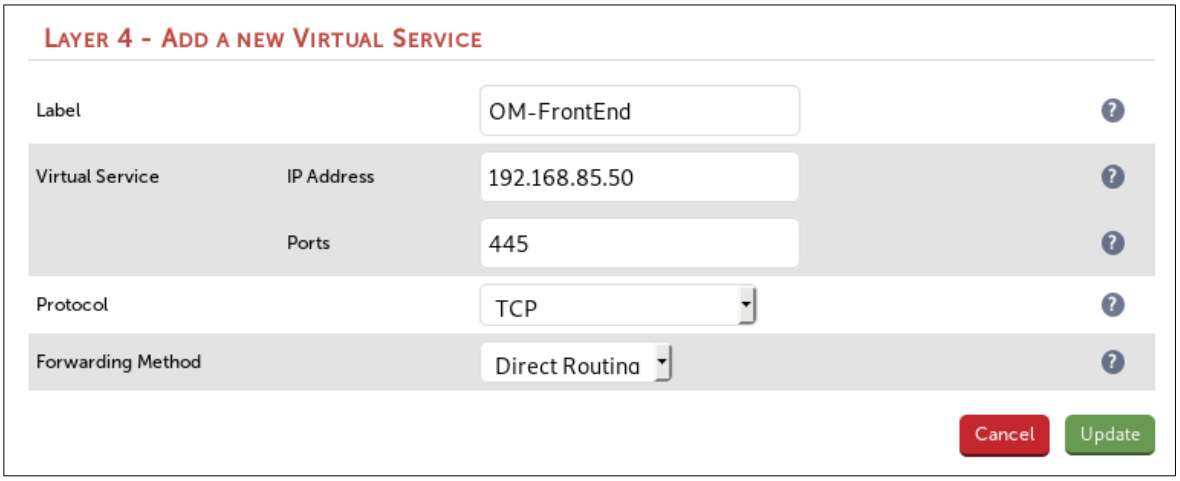
# 11. Appliance Configuration for Nuance Output Manager – Using Layer 4 DR Mode

When deploying Nuance Output Manager, two virtual services must be configured: a virtual service for the Output Manager front end, and a virtual service for the Output Manager back end.

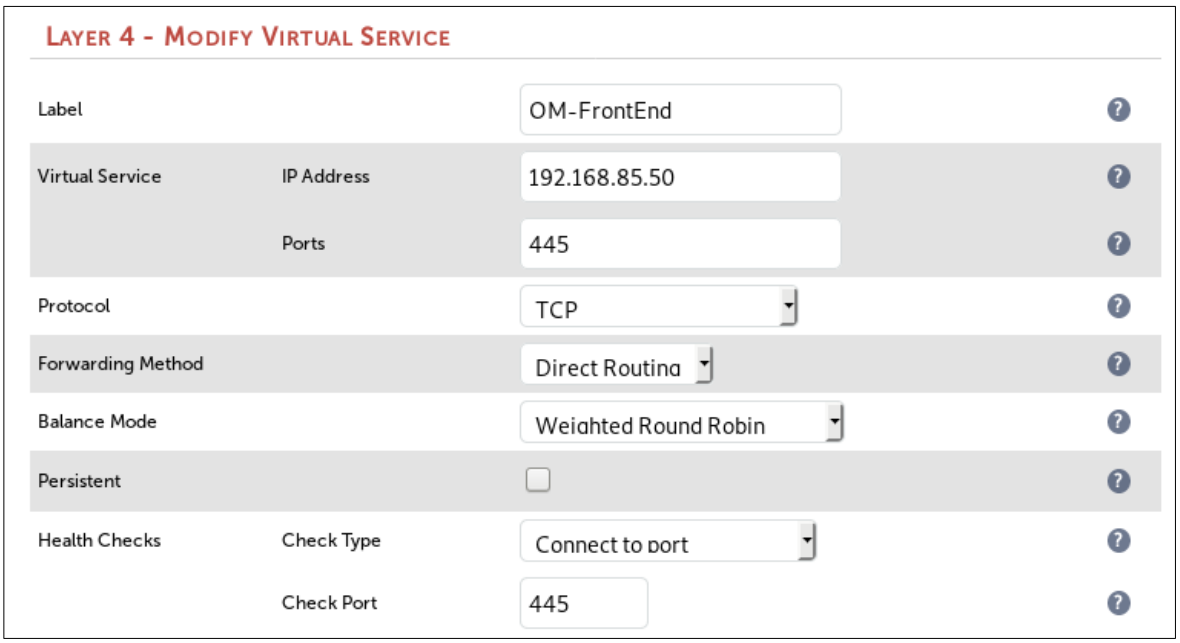
## Configuring VIP 1 – Output Manager Front End

### Configuring The Virtual Service (VIP)

1. Using the web user interface, navigate to *Cluster Configuration* > *Layer 4 – Virtual Services* and click on **Add a new Virtual Service**
2. Define the *Label* for the virtual service as required, e.g. **OM-FrontEnd**
3. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.85.50**
4. Set the *Ports* to **445**
5. Leave the *Protocol* set to **TCP**
6. Leave the *Forwarding Method* set to **Direct Routing**
7. Click **Update** to create the virtual service

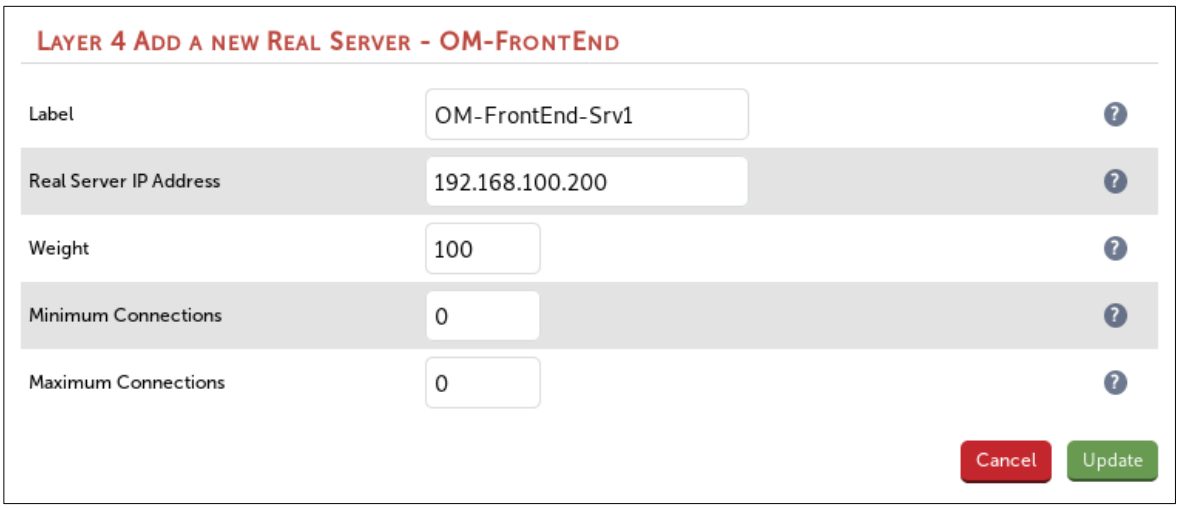



8. Click **Modfiy** next to the newly created VIP
9. Set *Balance Mode* to **Weighted Round Robin**
10. Make sure that the *Persistent* checkbox is not selected
11. Set the *Health Checks Check Type* to **Connect to port**
12. Set the *Check Port* to **445**
13. Click **Update**




## Defining The Real Servers (RIPs)

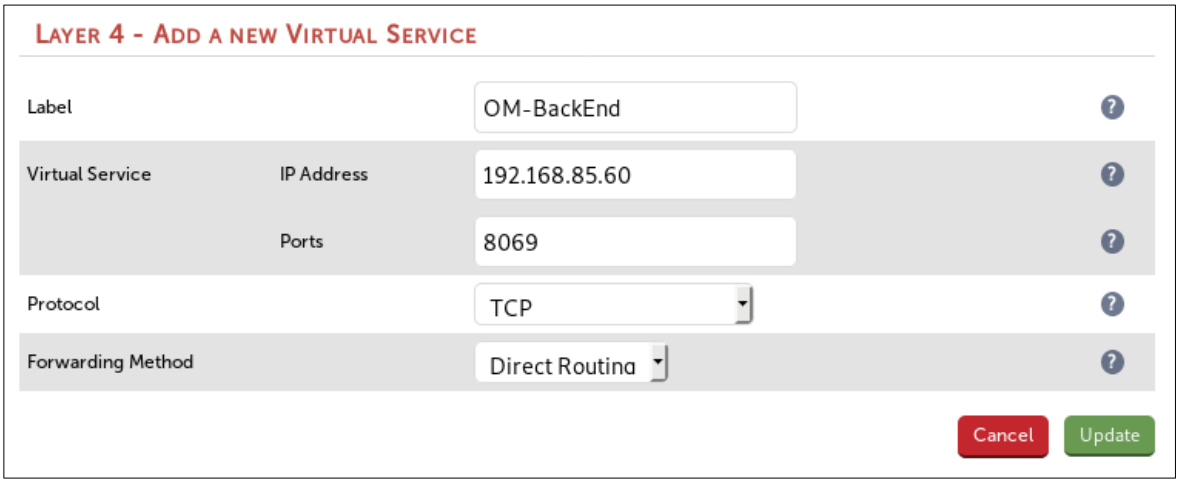
1. Using the web user interface, navigate to *Cluster Configuration* > *Layer 4 – Real Servers* and click on **Add a new Real Server** next to the newly created VIP
2. Define the *Label* for the real server as required, e.g. **OM-FrontEnd-Srv1**
3. Set the *Real Server IP Address* field to the required IP address, e.g. **192.168.100.200**
4. Click **Update**
5. Repeat these steps to add additional real servers as required



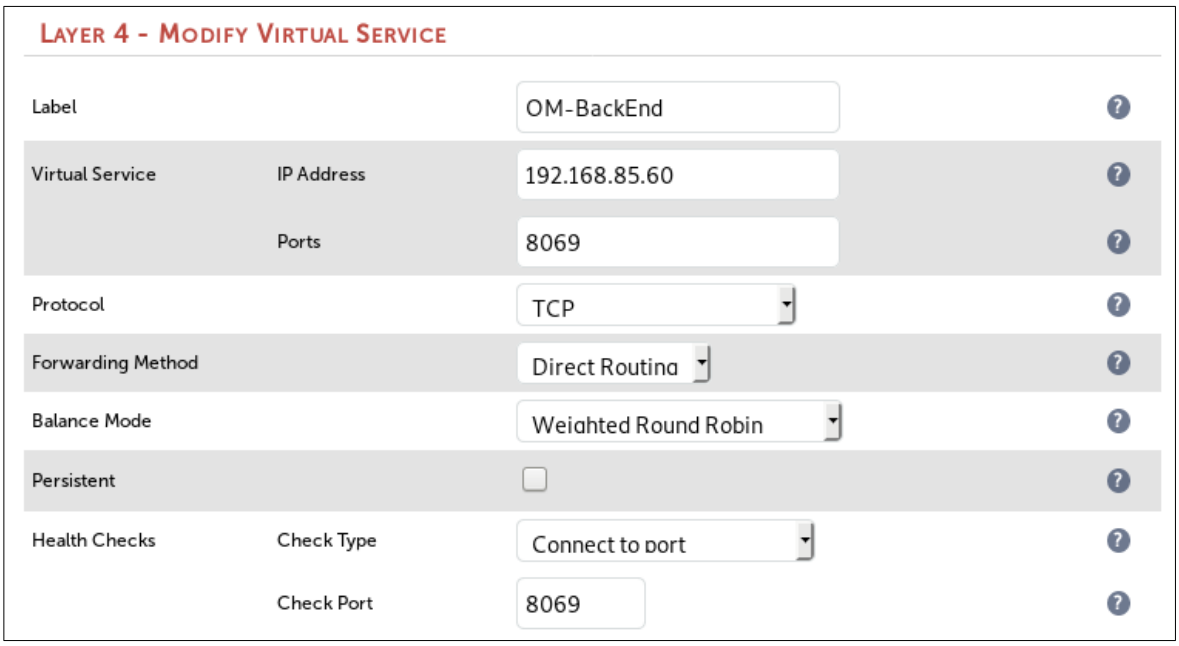

# Configuring VIP 2 – Output Manager Back End

## Configuring The Virtual Service (VIP)

1. Using the web user interface, navigate to *Cluster Configuration* > *Layer 4 – Virtual Services* and click on **Add a new Virtual Service**
2. Define the *Label* for the virtual service as required, e.g. **OM-BackEnd**
3. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.85.60**
4. Set the *Ports* field as required, based on your setup:
   - If only HTTP traffic will be passed to the back end, set the *Ports* field to **8068**
   - If only HTTPS traffic will be passed to the back end, set the *Ports* field to **8069**
5. Leave the *Protocol* set to **TCP**
6. Leave the *Forwarding Method* set to **Direct Routing**
7. Click **Update** to create the virtual service

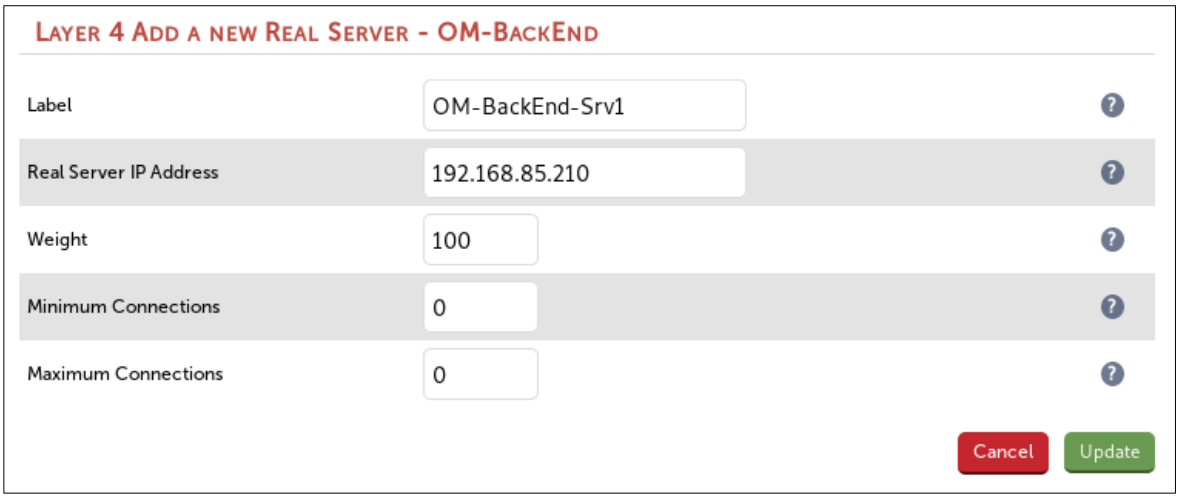



8. Click **Modfiy** next to the newly created VIP
9. Set *Balance Mode* to **Weighted Round Robin**
10. Make sure that the *Persistent* checkbox is not selected
11. Set the *Health Checks Check Type* to **Connect to port**
12. Set the *Check Port* to the same port defined under *Virtual Service Ports*, i.e. either **8068** or **8069**
13. Click **Update**




## Defining The Real Servers (RIPs)

1. Using the web user interface, navigate to *Cluster Configuration* > *Layer 4 – Real Servers* and click on **Add a new Real Server** next to the newly created VIP
2. Define the *Label* for the real server as required, e.g. **OM-BackEnd-Srv1**
3. Set the *Real Server IP Address* field to the required IP address, e.g. **192.168.85.210**
4. Click **Update**
5. Repeat these steps to add additional real servers as required



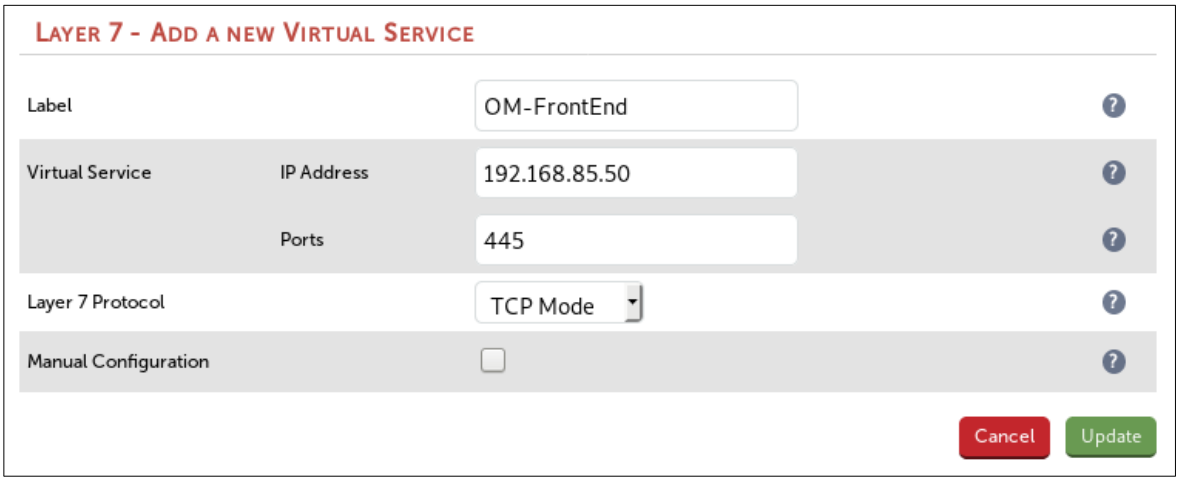
# 12. Appliance Configuration for Nuance Output Manager – Using Layer 7 SNAT Mode

When deploying Nuance Output Manager, two virtual services must be configured: a virtual service for the Output Manager front end, and a virtual service for the Output Manager back end.

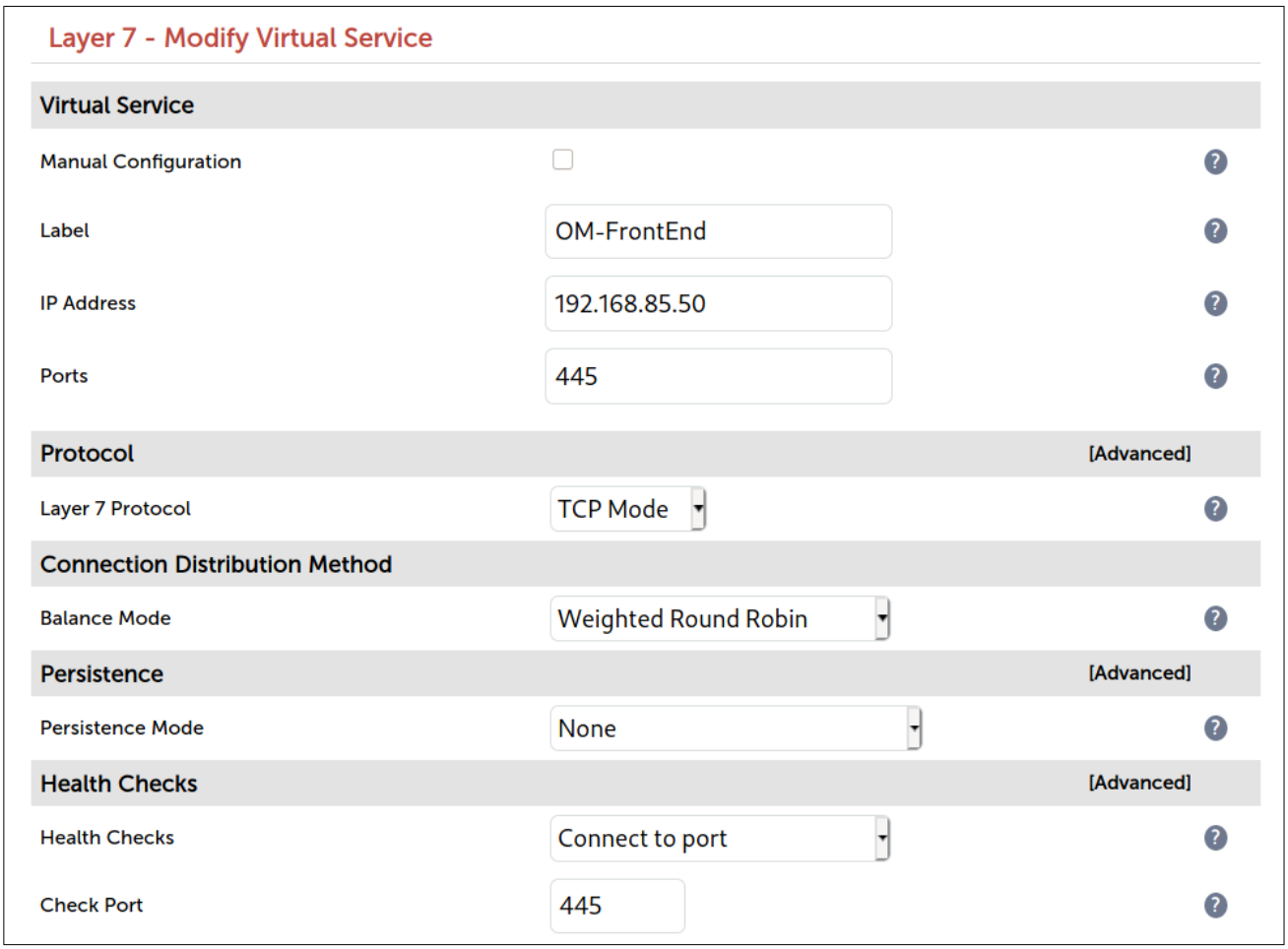
## Configuring VIP 1 – Output Manager Front End

### Configuring The Virtual Service (VIP)

1. Using the web user interface, navigate to *Cluster Configuration* > *Layer 7 – Virtual Services* and click on **Add a new Virtual Service**
2. Define the *Label* for the virtual service as required, e.g. **OM-FrontEnd**
3. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.85.50**
4. Set the *Ports* field to **445**
5. Set the *Layer 7 Protocol* to **TCP Mode**
6. Click **Update** to create the virtual service

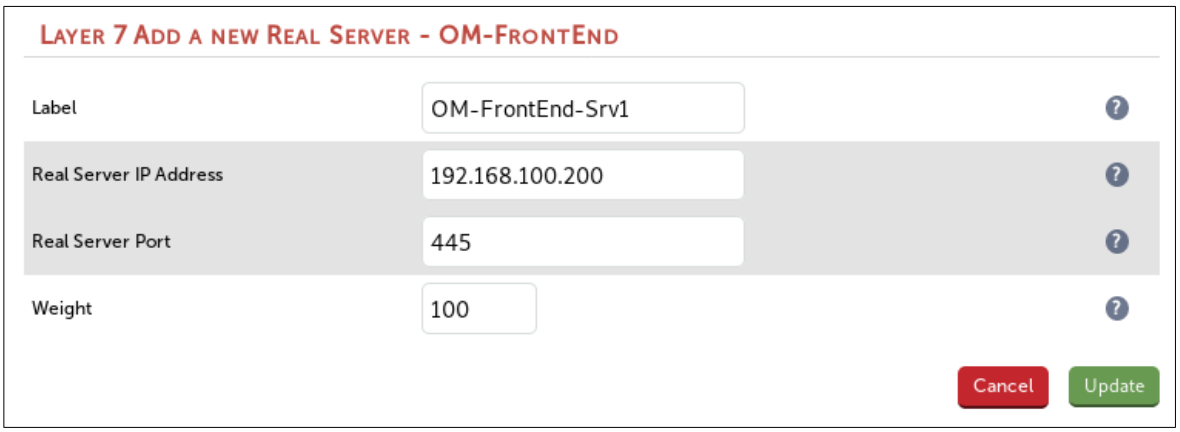



7. Click **Modfiy** next to the newly created VIP
8. Set *Balance Mode* to **Weighted Round Robin**
9. Set *Persistence Mode* to **None**
10. Under the *Health Checks* section click **Advanced** to expand the menu
11. Set *Health Checks* to **Connect to port**
12. Set *Check Port* to the "Port" value, e.g. **445**
13. Click **Update**




## Defining The Real Servers (RIPs)

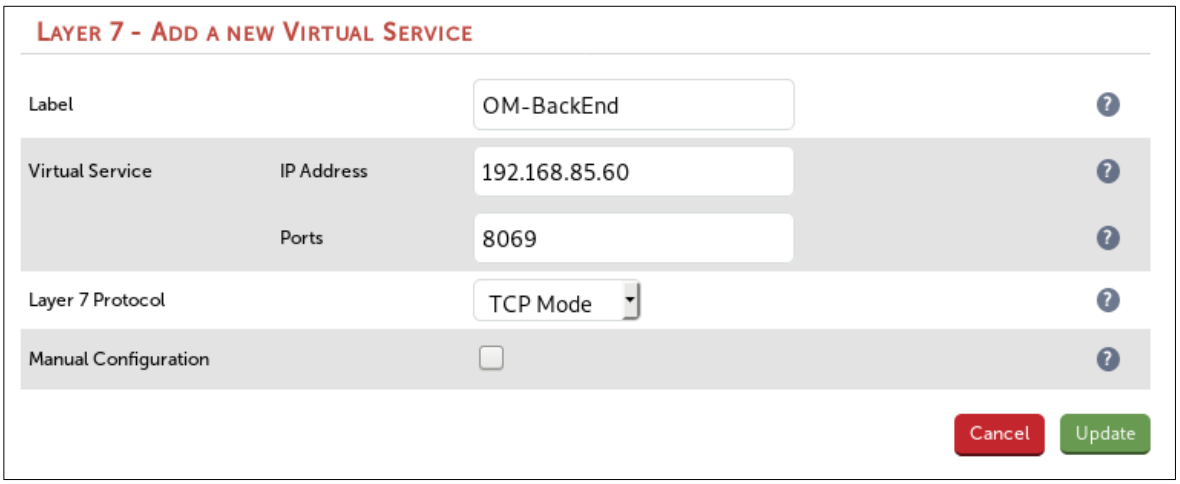
1. Using the web user interface, navigate to *Cluster Configuration* > *Layer 7 – Real Servers* and click on **Add a new Real Server** next to the newly created VIP
2. Define the *Label* for the real server as required, e.g. **OM-FrontEnd-Srv1**
3. Set the *Real Server IP Address* field to the required IP address, e.g. **192.168.100.200**
4. Set the *Real Server Port* field to **445**
5. Click **Update**
6. Repeat these steps to add additional real servers as required




## Configuring VIP 2 – Output Manager Back End

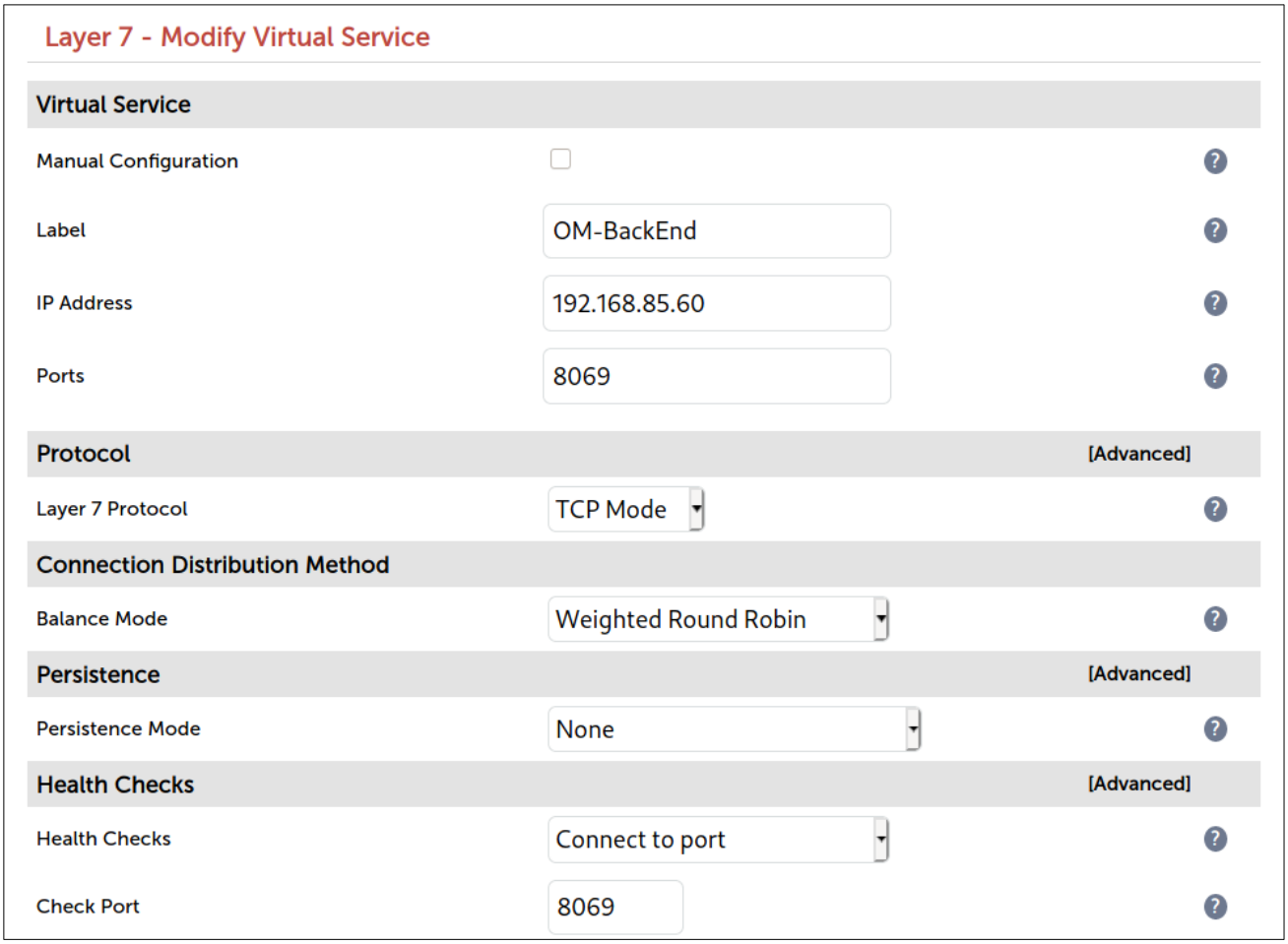
### Configuring The Virtual Service (VIP)

1. Using the web user interface, navigate to *Cluster Configuration > Layer 7 – Virtual Services* and click on **Add a new Virtual Service**
2. Define the *Label* for the virtual service as required, e.g. **OM-BackEnd**
3. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.85.60**
4. Set the *Ports* field as required, based on your setup:
   - If only HTTP traffic will be passed to the back end, set the *Ports* field to **8068**
   - If only HTTPS traffic will be passed to the back end, set the *Ports* field to **8069**
5. Set the *Layer 7 Protocol* to **TCP Mode**
6. Click **Update** to create the virtual service



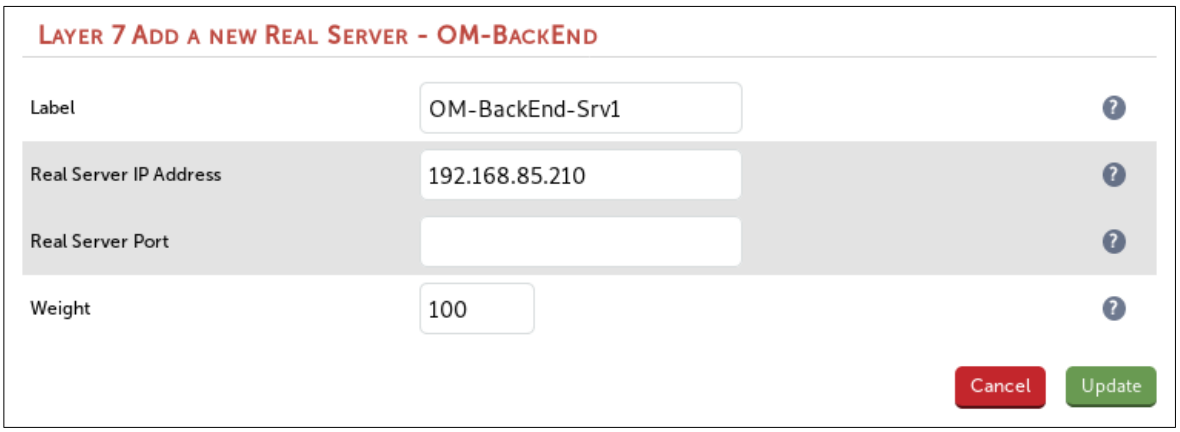

7. Click **Modfiy** next to the newly created VIP
8. Set *Balance Mode* to **Weighted Round Robin**
9. Set *Persistence Mode* to **None**
10. Under the *Health Checks* section click **Advanced** to expand the menu

11. Set *Health Checks* to **Connect to port**
12. Set the *Check Port* to the same port defined under *Virtual Service Ports*, i.e. either **8068** or **8069**
13. Click **Update**




## Defining The Real Servers (RIPs)

1. Using the web user interface, navigate to *Cluster Configuration > Layer 7 – Real Servers* and click on **Add a new Real Server** next to the newly created VIP
2. Define the *Label* for the real server as required, e.g. **OM-BackEnd-Srv1**
3. Set the *Real Server IP Address* field to the required IP address, e.g. **192.168.85.210**
4. Leave the *Real Server Port* field empty
5. Click **Update**
6. Repeat these steps to add additional real servers as required




### Finalizing the Configuration

To apply the new settings, HAProxy must be reloaded as follows:

1. Using the WebUI, navigate to: *Maintenance* > *Restart Services* and click **Reload HAProxy**

## 13. Testing & Verification

### Testing the Load Balanced Print Service

The load balanced print service can be tested, either by browsing to the virtual service IP address or the share name, so for example

\\10.10.10.190

or

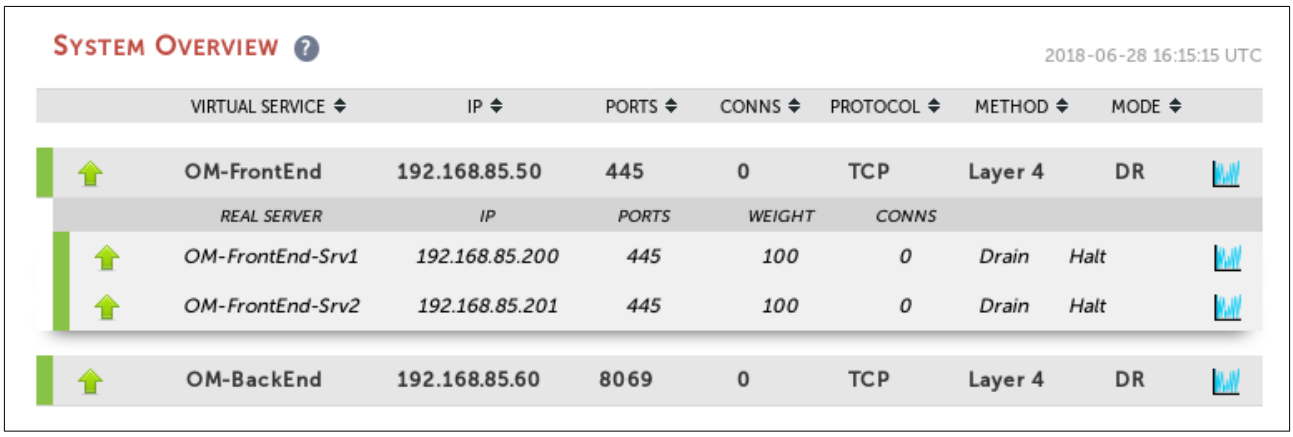
\\XeroxPrintService

Any shared printers and shared folders that have been configured on the real print servers should be visible.

It is also possible to test by using an Active Directory user and computers to set up a Group Policy Object (GPO) pointing to the Output Manager front end VIP. For more details on how to do this, refer to Appendix 2 on page 29 for more information.

### Using System Overview

The System Overview can be viewed in the WebUI. It shows a graphical view of all VIPs & RIPs (i.e. the Output Manager servers) and shows the state/health of each server as well as the state of the each cluster as a whole. The example below shows that all real servers are healthy and available to accept connections.




## 14. Technical Support

For more details about configuring the appliance and assistance with designing your deployment please don't hesitate to contact the support team using the following email address: support@loadbalancer.org

## 15. Further Documentation

The Administration Manual contains much more information about configuring and deploying the appliance. It's available here: http://pdfs.loadbalancer.org/loadbalanceradministrationv8.pdf

## 16. Conclusion

Loadbalancer.org appliances provide a very cost effective solution for highly available load balanced Nuance Output Manager environments.

# 17. Appendix

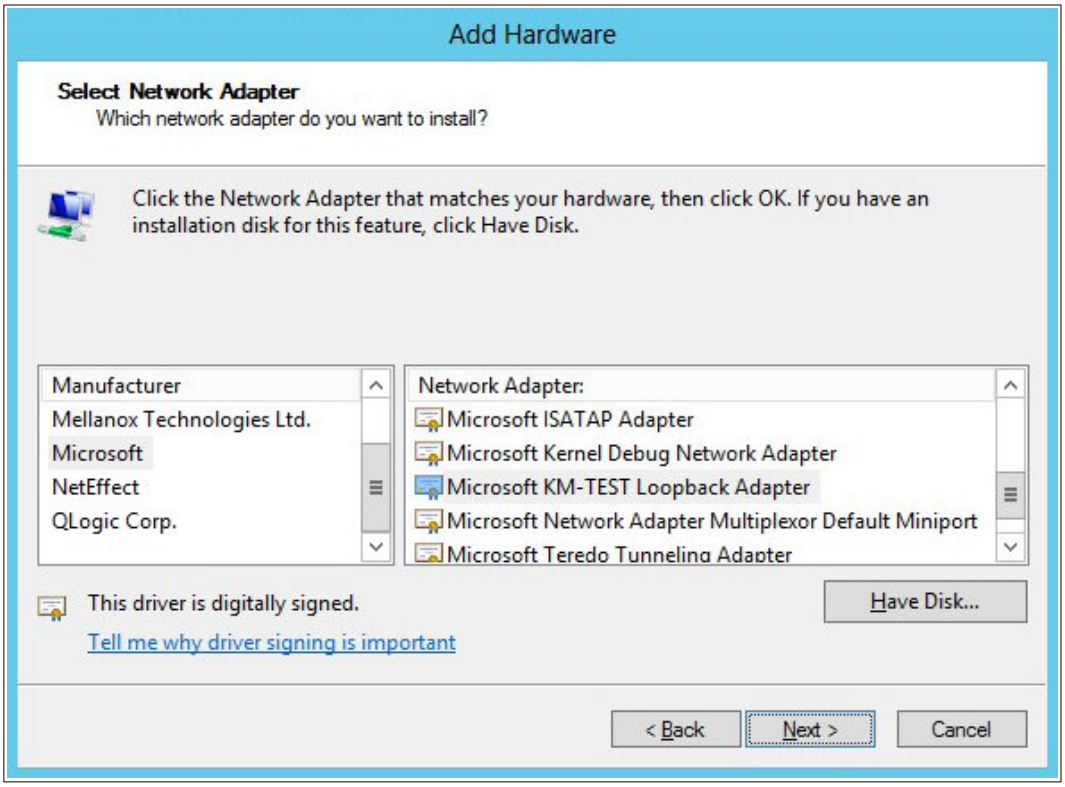
## 1 – Solving the ARP Problem

When using Layer 4 DR mode, the ARP problem must be solved. This involves configuring each Real Server to be able to receive traffic destined for the VIP, and ensuring that each Real Server does not respond to ARP requests for the VIP address – only the load balancer should do this.

The steps below are for Windows 2012/2016, for other versions of Windows please refer to chapter 6 in the administration manual.

### Step 1: Install the Microsoft Loopback Adapter

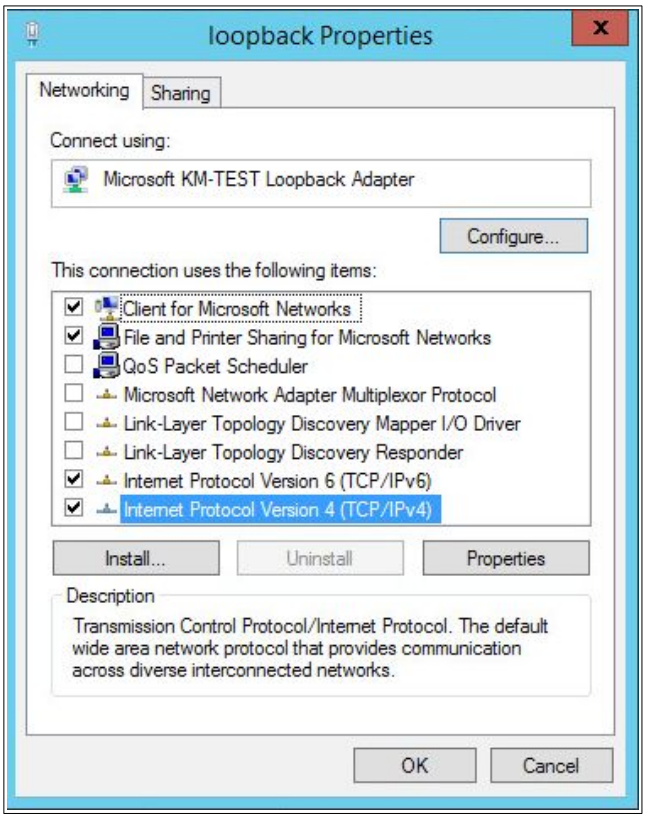
1. Click **Start**, then run **hdwwiz** to start the Hardware Installation Wizard
2. When the Wizard has started, click **Next**
3. Select **Install the hardware that I manually select from a list (Advanced)**, click **Next**
4. Select **Network adapters**, click **Next**
5. Select **Microsoft** & **Microsoft KM-Test Loopback Adapter**, click **Next**




6. Click **Next** to start the installation, when complete click **Finish**

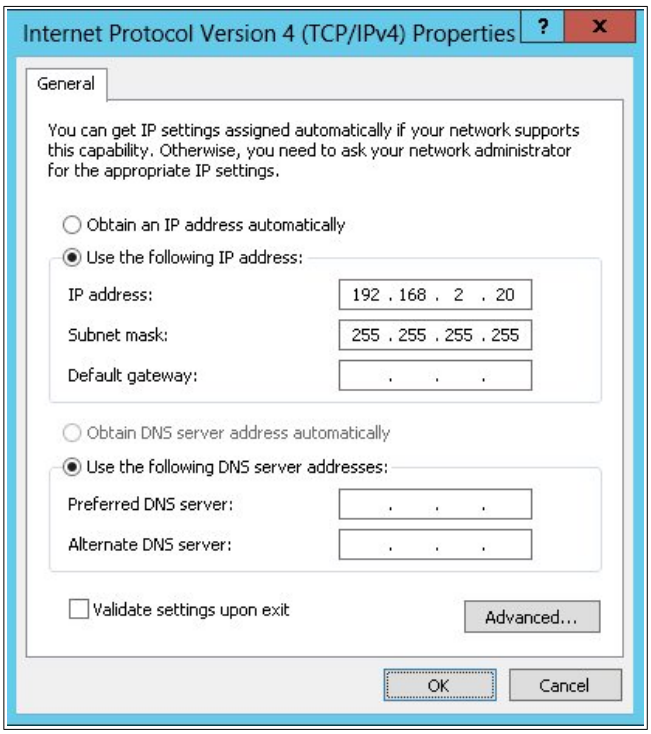
### Step 2: Configure the Loopback Adapter

1. Open Control Panel and click **Network and Sharing Center**
2. Click **Change adapter settings**
3. Right-click the new Loopback Adapter and select **Properties**
4. Un-check all items except **Internet Protocol Version 4 (TCP/IPv4)** and **Internet Protocol Version 6 (TCP/IPv6)** as shown below:

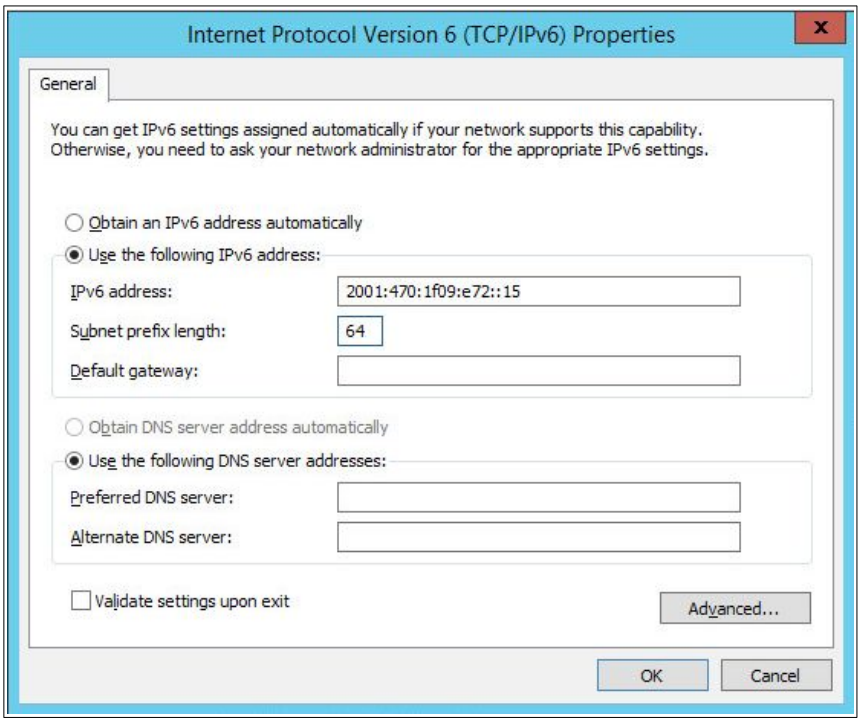



Note: Leaving both checked ensures that both IPv4 and IPv6 are supported. Select one If preferred.
Important: When configuring the Loopback Adapter to solve the ARP Problem, the following options must also be checked (ticked):
Client for Microsoft Networks and File & Printer Sharing for Microsoft Networks

5. If configuring IPv4 addresses select **Internet Protocol Version (TCP/IPv4)**, click **Properties** and configure the IP address to be the same as the Virtual Service (VIP) with a subnet mask of 255.255.255.255 , e.g. 192.168.2.20/255.255.255.255 as shown below:




6. If configuring IPv6 addresses select **Internet Protocol Version (TCP/IPv6)**, click **Properties** and configure the IP address to be the same as the Virtual Service (VIP) and set the *Subnet Prefix Length* to be the same as your network setting , e.g. 2001:470:1f09:e72::15/64 as shown below:




7. Click **OK** on TCP/IP Properties, then click **Close** on Ethernet Properties to save and apply the new settings
8. Now repeat the above process on the other Windows 2012/2016 Real Servers

### Step 3: Configure the strong/weak host behavior

Windows Server 2000 and Windows Server 2003 use the weak host model for sending and receiving for all IPv4 interfaces and the strong host model for sending and receiving for all IPv6 interfaces. You cannot configure this behavior. The Next Generation TCP/IP stack in Windows 2008 and later supports strong host sends and receives for both IPv4 and IPv6 by default. To ensure that Windows 2012/2016 is running in the correct mode to be able to respond to the VIP, the following commands must be run on each Real Server:

For IPv4 addresses:

```
netsh interface ipv4 set interface "net" weakhostreceive=enabled
netsh interface ipv4 set interface "loopback" weakhostreceive=enabled
netsh interface ipv4 set interface "loopback" weakhostsend=enabled
```

For these commands to work, the LAN connection NIC must be named "net" and the loopback NIC must be named "loopback" as shown below. If you prefer to leave your current NIC names, then the commands above must be modified accordingly. For example, if your network adapters are named "LAN" and "LOOPBACK", the commands required would be:

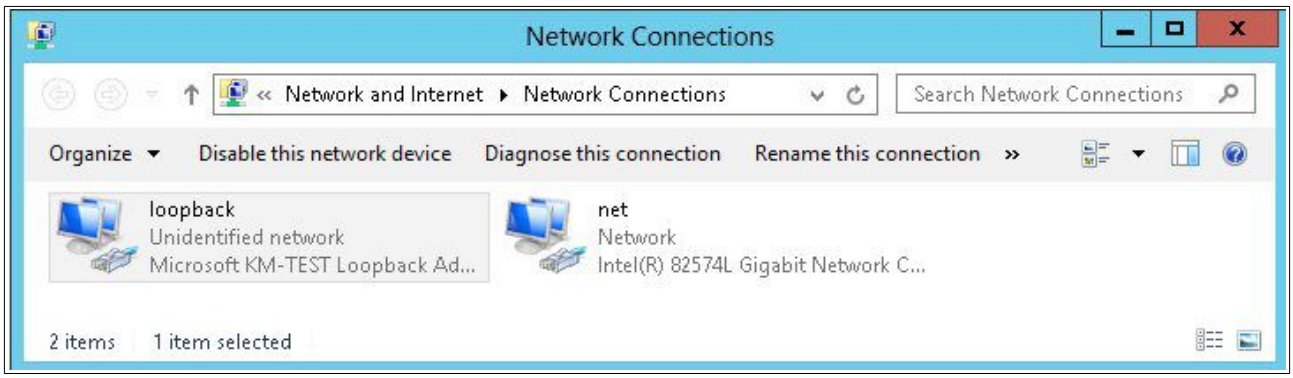
```
netsh interface ipv4 set interface "LAN" weakhostreceive=enabled
netsh interface ipv4 set interface "LOOPBACK" weakhostreceive=enabled
netsh interface ipv4 set interface "LOOPBACK" weakhostsend=enabled
```

For IPv6 addresses:

```
netsh interface ipv6 set interface "net" weakhostreceive=enabled
netsh interface ipv6 set interface "loopback" weakhostreceive=enabled
netsh interface ipv6 set interface "loopback" weakhostsend=enabled
netsh interface ipv6 set interface "loopback" dadtransmits=0
```

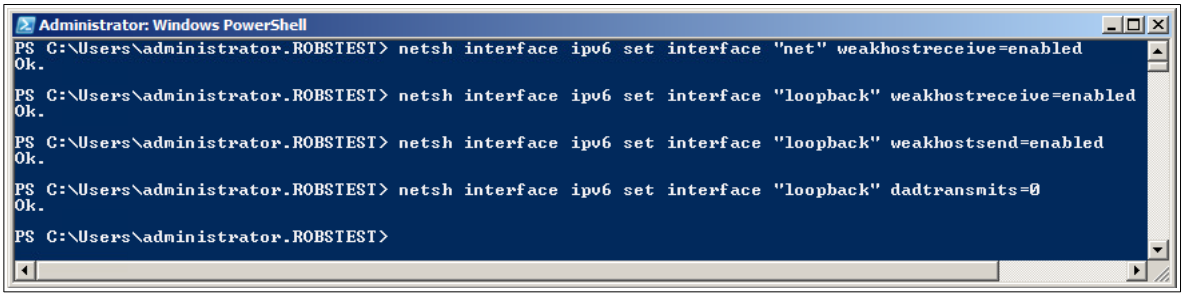
For these commands to work, the LAN connection NIC must be named "net" and the loopback NIC must be named "loopback" as shown below. If you prefer to leave your current NIC names, then the commands above must be modified accordingly. For example, if your network adapters are named "LAN" and "LOOPBACK", the commands required would be:

```
netsh interface ipv6 set interface "LAN" weakhostreceive=enabled
netsh interface ipv6 set interface "LOOPBACK" weakhostreceive=enabled
netsh interface ipv6 set interface "LOOPBACK" weakhostsend=enabled
netsh interface ipv6 set interface "LOOPBACK" dadtransmits=0
```




Note: The names for the NICs are case sensitive, so make sure that the name used for the interface and the name used in the commands match exactly.

1. Start Powershell or use a command window to run the appropriate netsh commands as shown in the example below:




Note: This shows an IPv6 example, use the IPv4 commands if you're using IPv4 addresses.

2. Now repeat these 4 commands on the other Windows 2012/2016 Real Servers

Note: Solving the ARP problem for other version of Windows is similar. For full details, please refer to the administration manual.

## 2 – Deploying Printers via Group Policy

It is possible to deploy a printer using a Group Policy, by following these steps:

1. Ensure that the load balanced print server name (e.g. XeroxPrintService) is resolvable by DNS or NetBIOS, as explained in section Configuring Name Resolution on page 10
2. On your print server, open: *Administrative Tools > Printer Management*
3. Right-click Print Servers and enter the name for your load balanced print server (e.g. XeroxPrintService) and

click **OK**

4. Expand the Printers section
5. Right click the printer you want to deploy, and click **Deploy with Group Policy**
6. Select the relevant GPO and configure the remaining settings according to your requirements

## 3 – Clustered Pair Configuration – Adding a Slave Unit

If you initially configured just the master unit and now need to add a slave - our recommended procedure, please refer to the relevant section below for more details:

> Note: A number of settings are not replicated as part of the master/slave pairing process and therefore must be manually configured on the slave appliance. These are listed below:
>
> - Hostname & DNS settings
> - Network settings including IP addresses, bonding configuration and VLANs
> - Routing configuration including default gateways and static routes
> - Date & time settings
> - Physical – Advanced Configuration settings including Internet Proxy IP address & port, Firewall table size, SMTP relay and Syslog server
> - SNMP settings
> - Graphing settings
> - Firewall Script & Firewall Lockdown Script settings

Software updates

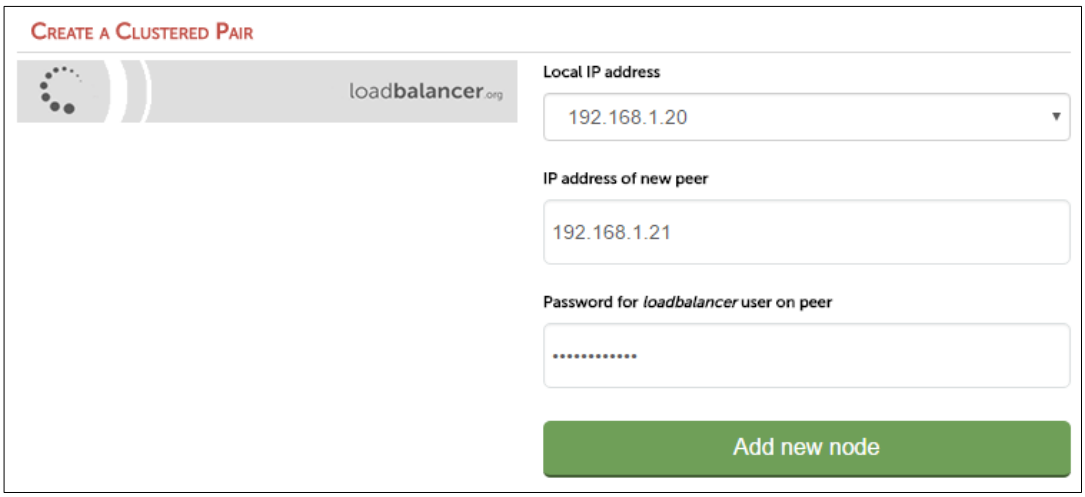
**Version 7:**

Please refer to **Chapter 8 – Appliance Clustering for HA** in the v7 Administration Manual.

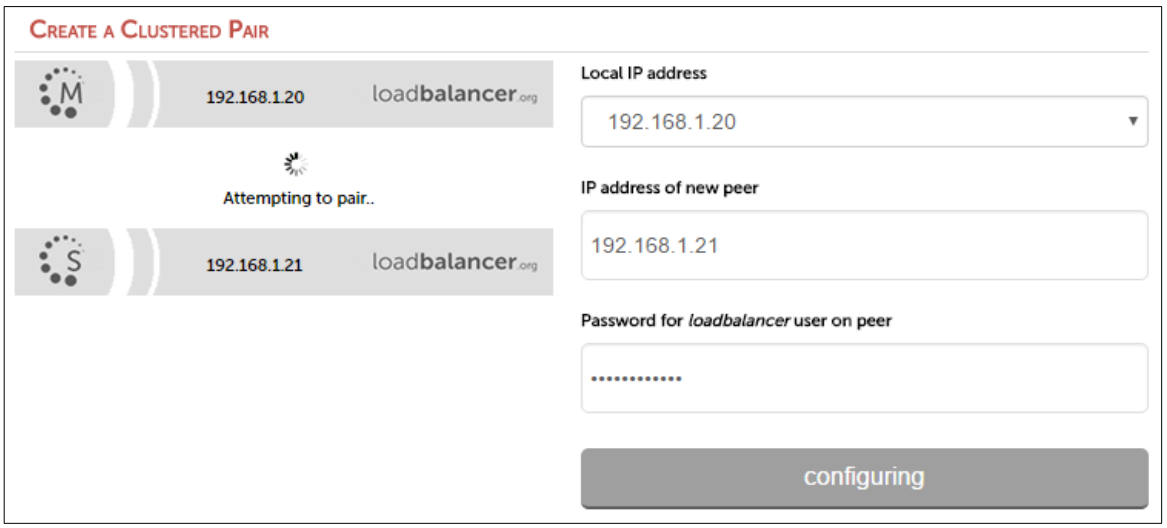
**Version 8:**

*To add a slave node – i.e. create a highly available clustered pair:*

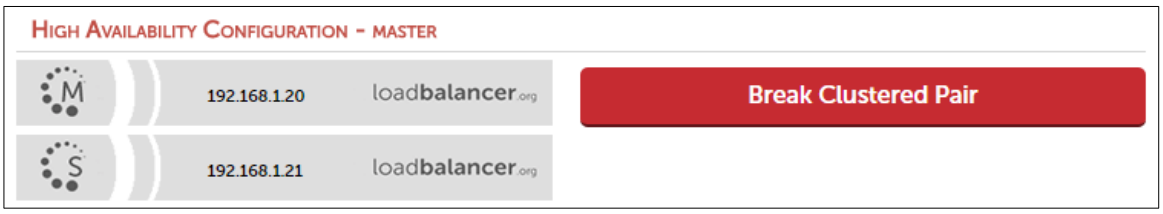
- Deploy a second appliance that will be the slave and configure initial network settings
- Using the WebUI, navigate to: *Cluster Configuration > High-Availability Configuration*




- Specify the IP address and the *loadbalancer* users password (the default is 'loadbalancer') for the slave (peer) appliance as shown above
- Click Add new node
- The pairing process now commences as shown below:




- Once complete, the following will be displayed:




- To finalize the configuration, restart heartbeat and any other services as prompted in the blue message box at the top of the screen

Note: Clicking the Restart Heartbeat button on the master appliance will also automatically restart heartbeat on the slave appliance.

Note: Please refer to chapter 9 – Appliance Clustering for HA in the Administration Manual for more detailed information on configuring HA with 2 appliances.

## 18. Document Revision History

| Version | Date | Change | Reason for Change | Changed By |
|---|---|---|---|---|
| 1.0.0 | 3 July 2018 | Initial version | | AH |
| 1.0.1 | 5 July 2018 | Replaced an irrelevant note with a new note about configuring HA in the Output Manager Server Configuration Utility | Required updates | AH |
| 1.0.2 | 6 December 2018 | Added the new "Company Contact Information" page | Required updates | AH |
| 1.1.0 | 10 December 2019 | Styling and layout | General styling updates | AH |
| 1.1.1 | 8 June 2020 | New title page<br>Updated Canadian contact details<br>New screenshots for creating layer 7 VIPs | Branding update<br>Change to Canadian contact details<br>Changes to the appliance WebUI | AH |

## About Loadbalancer.org

Loadbalancer.org's mission is to ensure that its clients' businesses are never interrupted. The load balancer experts ask the right questions to get to the heart of what matters, bringing a depth of understanding to each deployment. Experience enables Loadbalancer.org engineers to design less complex, unbreakable solutions - and to provide exceptional personalized support.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