

Load Balancing MagicMail

Version 1.0.0



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1. About this Guide

This guide details the steps required to configure a load balanced MagicMail environment utilizing Loadbalancer.org appliances. It covers the configuration of the load balancers and also any MagicMail 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 [Administration Manual](#).

2. Loadbalancer.org Appliances Supported

All our products can be used with MagicMail. For full specifications of available models please refer to <https://www.loadbalancer.org/products/enterprise>.

Some features may not be available or fully supported in all cloud platforms due to platform specific limitations. For more details, please refer to the "Main Differences to our Standard (Non-Cloud) Product" section in the appropriate cloud platform [Quick Start Guide](#) or check with Loadbalancer.org support.

3. Software Versions Supported

3.1. Loadbalancer.org Appliance

- V8.9.1 and later

Note

The screenshots used throughout this document aim to track the latest Loadbalancer.org software version. If you're using an older version, or the very latest, the screenshots presented here may not match your WebUI exactly.

3.2. MagicMail

- All versions

4. MagicMail

MagicMail is the carrier-grade email platform for ISPs and Telcos. It provides email identity security through secured mailbox access and tools for maintaining IP reputation for uninterrupted email deliveries.

5. Load Balancing MagicMail

Note

It's highly recommended that you have a working MagicMail environment first before implementing the load balancer.

5.1. Load Balancing & HA Requirements

Using a load balancer to distribute inbound connections across multiple MagicMail servers provides improved performance, HA and resilience.



5.2. Virtual Service (VIP) Requirements

The following VIPs are required:

| Ref. | VIP Name | Mode | Port(s) | Persistence Mode | Health Check |
|--------|-----------|------------------|-------------------------|------------------|-----------------|
| VIP 1 | Co_SMTP | L4 NAT (TCP) | 25 | Source IP | Connect to Port |
| VIP 2 | Co_SUBMIT | L4 NAT (TCP) | 587 | Source IP | Connect to Port |
| VIP 3 | Co_SMTBS | L4 NAT (TCP) | 465 | Source IP | Connect to Port |
| VIP 4 | Co_HTTP | L4 NAT (TCP) | 80 | Source IP | Connect to Port |
| VIP 5 | Co_HTTPS | L4 NAT (TCP) | 443 | Source IP | Connect to Port |
| VIP 6 | Co_POP3 | L4 NAT (TCP) | 110 | Source IP | Connect to Port |
| VIP 7 | Co_IMAP | L4 NAT (TCP) | 143 | Source IP | Connect to Port |
| VIP 8 | Co_POP3S | L4 NAT (TCP) | 995 | Source IP | Connect to Port |
| VIP 9 | Co_IMAPS | L4 NAT (TCP) | 993 | Source IP | Connect to Port |
| VIP 10 | Co_RADIUS | L4 NAT (UDP) | 1812,1813, 1645,1646 | Source IP | Ping |
| VIP 11 | Co_DNS | L4 NAT (TCP/UDP) | 53 | Source IP | Connect to Port |
| VIP 12 | Co_DNSDB | L4 NAT (TCP) | 5432 | Source IP | Connect to Port |

 **Note**

The labels of the Virtual Services usually contain the name of the Telco or ISP. So in the table above, the prefix "Co" can be replaced by the Telco's or ISP's name.

 **Note**

VIP 10 (Co_RADIUS) ports 1645 and 1646 in are only needed when the RADIUS plugin is installed on the MagicMail servers.

 **Note**

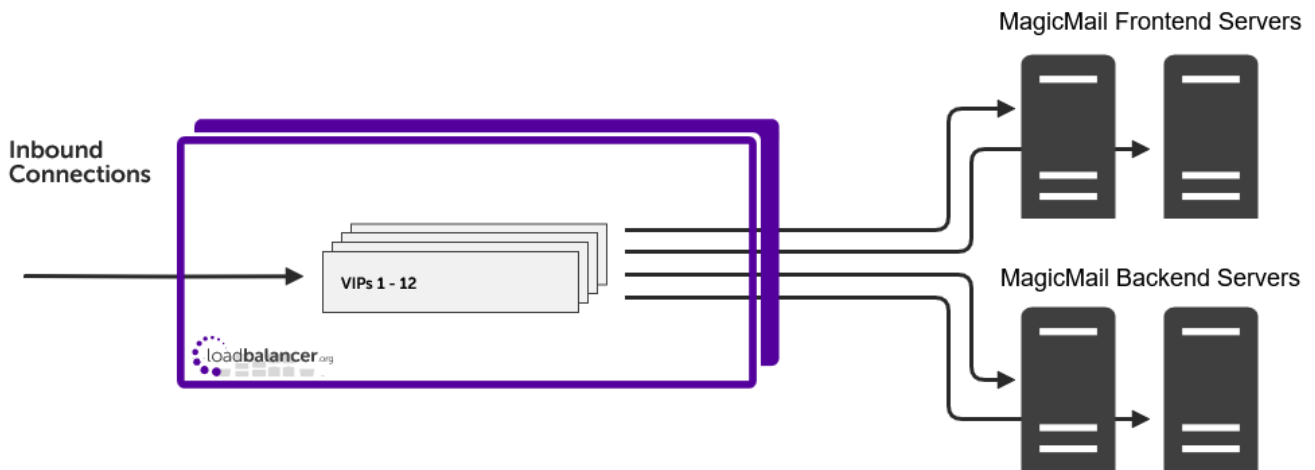
VIP 11 (Co_DNS) is only required when the DNS plugin is installed on the MagicMail servers.

 **Note**

Additional VIPs can be created to assist with trouble-shooting if desired. For details, please refer to [VIPs for Trouble-shooting](#) in the appendix.

6. Deployment Concept

Once the load balancer is deployed, clients connect to the Virtual Services (VIPs) rather than connecting directly to one of the MagicMail servers. These connections are then load balanced across the MagicMail servers to distribute the load according to the load balancing algorithm selected.



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 the section [Configuring HA - Adding a Secondary Appliance](#) in the appendix for more details on configuring a clustered pair.

7. 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*.

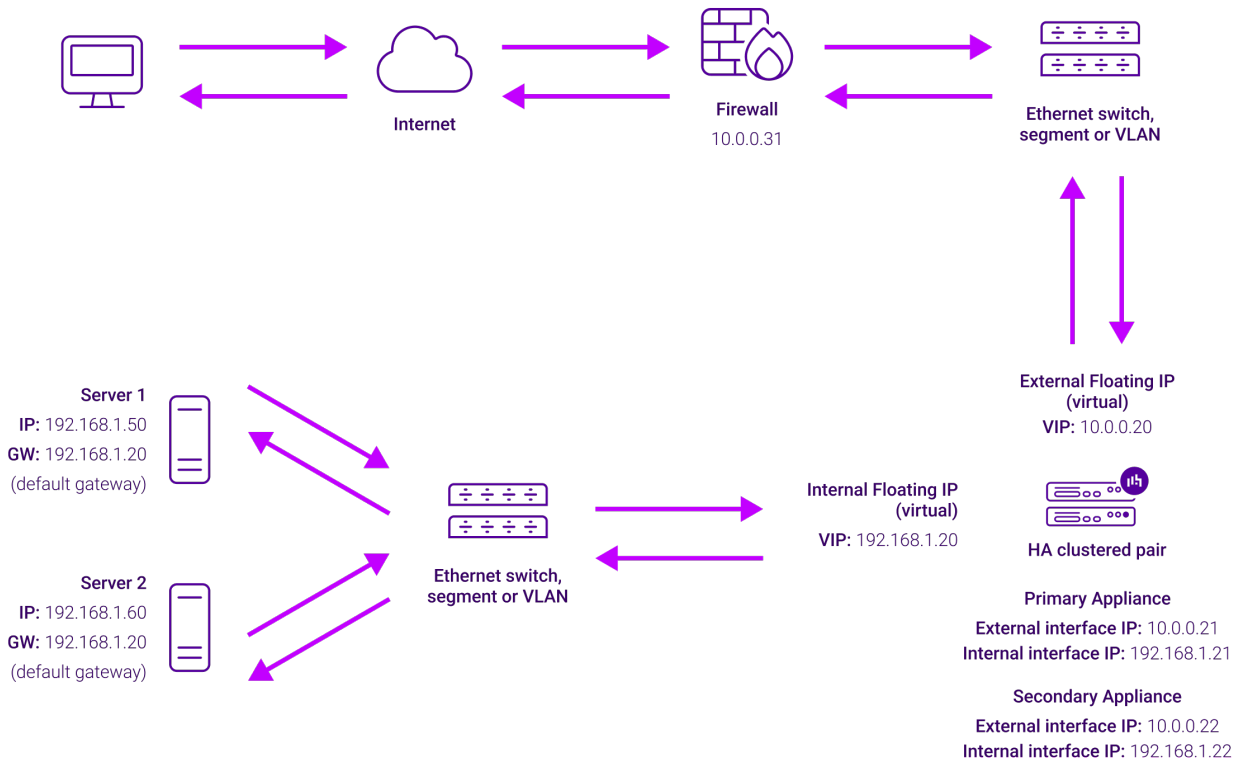
For MagicMail, layer 4 NAT mode is recommended. This mode is described below and is used for the configuration presented in this guide.

Note

DR mode is not supported because MagicMail updates can overwrite the changes that must be made on each Real Server to solve the ARP Problem.

7.1. Layer 4 NAT Mode

Layer 4 NAT mode is a high performance solution, although not as fast as layer 4 DR mode. This is because real server responses must flow back to the client via the load balancer rather than directly as with DR mode. The image below shows an example network diagram for this mode.



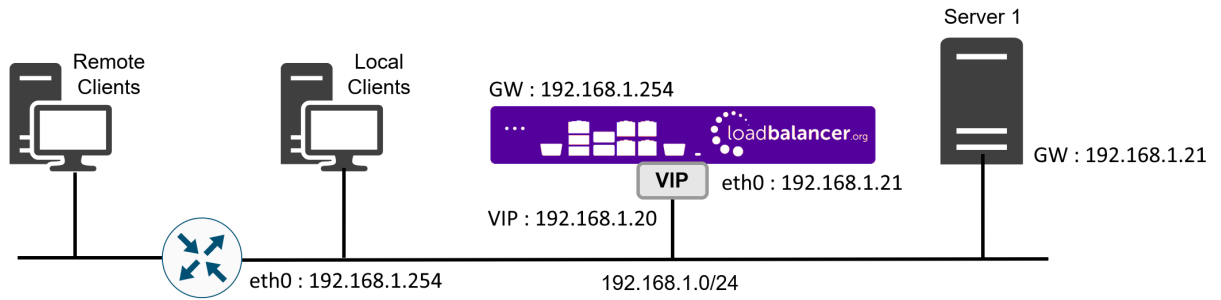
- The load balancer translates all requests from the Virtual Service to the Real Servers.
- NAT mode can be deployed in the following ways:
 - **Two-arm (using 2 Interfaces)** (as shown above) - Here, 2 subnets are used. The VIP is located in one subnet and the load balanced Real Servers are located in the other. The load balancer requires 2 interfaces, one in each subnet.

Note This can be achieved by using two network adapters, or by creating VLANs on a single adapter.

- Normally **eth0** is used for the internal network and **eth1** is used for the external network, although this is not mandatory since any interface can be used for any purpose.
- If the Real Servers require Internet access, **Auto-NAT** should be enabled using the WebUI menu option: **Cluster Configuration > Layer 4 - Advanced Configuration**, the external interface should be selected.
- The default gateway on the Real Servers must be set to be an IP address on the load balancer.

Note For an HA clustered pair, a floating IP should be added to the load balancer and used as the Real Server's default gateway. This ensures that the IP address can "float" (move) between Primary and Secondary appliances.

- Clients can be located in the same subnet as the VIP or any remote subnet provided they can route to the VIP.
- **One-arm (using 1 Interface)** - Here, the VIP is brought up in the same subnet as the Real Servers.



- To support remote clients, the default gateway on the Real Servers must be an IP address on the load balancer and routing on the load balancer must be configured so that return traffic is routed back via the router.

Note

For an HA clustered pair, a floating IP should be added to the load balancer and used as the Real Server's default gateway. This ensures that the IP address can "float" (move) between Primary and Secondary appliances.

- To support local clients, return traffic would normally be sent directly to the client bypassing the load balancer which would break NAT mode. To address this, the routing table on the Real Servers must be modified to force return traffic to go via the load balancer. For more information please refer to [One-Arm \(Single Subnet\) NAT Mode](#).
- If you want Real Servers to be accessible on their own IP address for non-load balanced services, e.g. RDP, you will need to setup individual SNAT and DNAT firewall script rules for each Real Server or add additional VIPs for this.
- Port translation is possible with Layer 4 NAT mode, e.g. VIP:80 → RIP:8080 is supported.
- NAT mode is transparent, i.e. the Real Server will see the source IP address of the client.

NAT Mode Packet re-Writing

In NAT mode, the inbound destination IP address is changed by the load balancer from the Virtual Service IP address (VIP) to the Real Server. For outbound replies the load balancer changes the source IP address of the Real Server to be the Virtual Services IP address.

The following table shows an example NAT mode setup:

| Protocol | VIP | Port | RIP | Port |
|----------|-----------|------|--------------|------|
| TCP | 10.0.0.20 | 80 | 192.168.1.50 | 80 |

In this simple example all traffic destined for IP address 10.0.0.20 on port 80 is load-balanced to the real IP address 192.168.1.50 on port 80.

Packet rewriting works as follows:

- 1) The incoming packet for the web server has source and destination addresses as:



| | | | |
|---------------|---------------|--------------------|--------------|
| Source | x.x.x.x:34567 | Destination | 10.0.0.20:80 |
|---------------|---------------|--------------------|--------------|

2) The packet is rewritten and forwarded to the backend server as:

| | | | |
|---------------|---------------|--------------------|-----------------|
| Source | x.x.x.x:34567 | Destination | 192.168.1.50:80 |
|---------------|---------------|--------------------|-----------------|

3) Replies return to the load balancer as:

| | | | |
|---------------|-----------------|--------------------|---------------|
| Source | 192.168.1.50:80 | Destination | x.x.x.x:34567 |
|---------------|-----------------|--------------------|---------------|

4) The packet is written back to the VIP address and returned to the client as:

| | | | |
|---------------|--------------|--------------------|---------------|
| Source | 10.0.0.20:80 | Destination | x.x.x.x:34567 |
|---------------|--------------|--------------------|---------------|

8. Configuring MagicMail for Load Balancing

When using Layer 4 NAT mode, each Real Server's default gateway must be set to be an IP address on the load balancer. For a clustered pair, a floating IP address must be used. This allows the gateway address to move to the Secondary appliance should a failover occur. For details, see [Configure a Floating IP for use as the Default Gateway](#).

9. Loadbalancer.org Appliance – the Basics

9.1. Virtual Appliance

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, XEN and Nutanix AHV and has been optimized for each Hypervisor. By default, the VA is allocated 2 vCPUs, 4GB of RAM and has a 20GB 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 [Virtual Appliance Installation](#) and the ReadMe.txt text file included in the VA download for additional information on deploying the VA using the various Hypervisors.


Note

The VA has 4 network adapters. For VMware only the first adapter (**eth0**) is connected by default. For HyperV, KVM, XEN and Nutanix AHV all adapters are disconnected by default. Use the network configuration screen within the Hypervisor to connect the required adapters.

9.2. Initial Network Configuration


After boot up, follow the instructions on the appliance console to configure the management IP address, subnet mask, default gateway, DNS servers and other network and administrative settings.



 **Important** Be sure to set a secure password for the load balancer, when prompted during the setup routine.


9.3. Accessing the Appliance WebUI


The WebUI is accessed using a web browser. By default, users are authenticated using Apache authentication. Users can also be authenticated against LDAP, LDAPS, Active Directory or Radius - for more information, please refer to [External Authentication](#).

 **Note** There are certain differences when accessing the WebUI for the cloud appliances. For details, please refer to the relevant [Quick Start / Configuration Guide](#).

1. Using a browser, navigate to the following URL:

<https://<IP-address-configured-during-the-network-setup-wizard>:9443/lbadmin/>


 **Note** You'll receive a warning about the WebUI's SSL certificate. This is due to the default self signed certificate that is used. If preferred, you can upload your own certificate - for more information, please refer to [Appliance Security Features](#).

 **Note** If you need to change the port, IP address or protocol that the WebUI listens on, please refer to [Service Socket Addresses](#).

2. Log in to the WebUI using the following credentials:

Username: loadbalancer

Password: <configured-during-network-setup-wizard>

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

Once logged in, the WebUI will be displayed as shown below:

Primary | Secondary Active | Passive Link 8 Seconds ↻

System Overview

Local Configuration

Cluster Configuration

Maintenance

View Configuration

Reports

Logs

Support

Live Chat

WARNING: YOUR TRIAL IS DUE TO EXPIRE IN 30 DAYS.

Buy with confidence. All purchases come with a 90 day money back guarantee. Already bought? Enter your license key [here](#)

Buy Now

System Overview ? 2025-05-08 12:37:21 UTC

Would you like to run the Setup Wizard?

Accept
Dismiss

VIRTUAL SERVICE | IP | PORTS | CONNS | PROTOCOL | METHOD | MODE

No Virtual Services configured.

Network Bandwidth

■ RX 28 Min, 2713 Avg, 27344772 Total.
■ TX 0 Min, 13777 Avg, 138872181 Total.

System Load Average

■ 1m average 0.00 Min, 0.08 Avg, 0.68 Max
■ 5m average 0.00 Min, 0.04 Avg, 0.30 Max
■ 15m average 0.00 Min, 0.02 Avg, 0.12 Max

Memory Usage

- You'll be asked if you want to run the Setup Wizard. Click **Dismiss** if you're following a guide or want to configure the appliance manually. Click **Accept** to start the Setup Wizard.

i **Note** The Setup Wizard can only be used to configure Layer 7 services.

9.3.1. Main Menu Options

- System Overview** - Displays a graphical summary of all VIPs, RIPs and key appliance statistics
- Local Configuration** - Configure local host settings such as IP address, DNS, system time etc.
- Cluster Configuration** - Configure load balanced services such as VIPs & RIPs
- Maintenance** - Perform maintenance tasks such as service restarts and creating backups
- View Configuration** - Display the saved appliance configuration settings
- Reports** - View various appliance reports & graphs
- Logs** - View various appliance logs
- Support** - Create a support download, contact the support team & access useful links



Live Chat - Start a live chat session with one of our Support Engineers

9.4. Appliance Software Update

We recommend that the appliance is kept up to date to ensure that you benefit from the latest bug fixes, security updates and feature improvements. Both online and offline update are supported.

 **Note**

For full details, please refer to [Appliance Software Update](#) in the Administration Manual.

 **Note**

Services may need to be restarted/reloaded after the update process completes or in some cases a full appliance restart may be required. We therefore recommend performing the update during a maintenance window.

9.4.1. Online Update

The appliance periodically contacts the Loadbalancer.org update server (**update.loadbalancer.org**) and checks for updates. This is the default behavior and can be disabled if preferred. If an update is found, a notification similar to the example below will be displayed at the top of the WebUI:

Information: Update 8.13.1 is now available for this appliance.

Online Update

Click **Online Update**. A summary of all new features, improvements, bug fixes and security updates included in the update will be displayed. Click **Update** at the bottom of the page to start the update process.

 **Important**

Do not navigate away whilst the update is ongoing, this may cause the update to fail.

The update can take several minutes depending on download speed and upgrade version. Once complete, the following message will be displayed:

Information: Update completed successfully. Return to **system overview**.

If services need to be reloaded/restarted or the appliance needs a full restart, you'll be prompted accordingly.

9.4.2. Offline Update

If the appliance does not have access to the Internet, offline update can be used.

To check for the latest version, please refer to our product roadmap page available [here](#). To obtain the latest offline update files contact support@loadbalancer.org.

To perform an offline update:



1. Using the WebUI, navigate to: **Maintenance > Software Update**.
2. Select **Offline Update**.
3. The following screen will be displayed:

Software Update

Offline Update

The following steps will lead you through offline update.

1. Contact **Loadbalancer.org support** to obtain the offline update archive and checksum.
2. Save the archive and checksum to your local machine.
3. Select the archive and checksum files in the upload form below.
4. Click *Upload and Install* to begin the update process.

Archive: No file chosen

Checksum: No file chosen

4. Select the *Archive* and *Checksum* files.
5. Click **Upload and Install**.
6. If services need to be reloaded/restarted or the appliance needs a full restart, you'll be prompted accordingly.

9.5. Ports Used by the Appliance

By default, the appliance uses the following TCP & UDP ports:

| Protocol | Port | Purpose |
|-----------|---------|---|
| TCP | 22 * | SSH |
| TCP & UDP | 53 * | DNS / GSLB |
| TCP & UDP | 123 | NTP |
| TCP & UDP | 161 * | SNMP |
| UDP | 6694 | Heartbeat between Primary & Secondary appliances in HA mode |
| TCP | 7778 | HAProxy persistence table replication |
| TCP | 9000 * | Gateway service (Centralized/Portal Management) |
| TCP | 9080 * | WebUI - HTTP (disabled by default) |
| TCP | 9081 * | Nginx fallback page |
| TCP | 9443 * | WebUI - HTTPS |
| TCP | 25565 * | Shuttle service (Centralized/Portal Management) |

Note

The ports used for SSH, GSLB, SNMP, the WebUI, the fallback page, the gateway service and the shuttle service can be changed if required. For more information, please refer to [Service Socket](#)



9.6. 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 unit is covered in the section [Configuring HA - Adding a Secondary Appliance](#) of the appendix.

10. Appliance Configuration for MagicMail

10.1. Configure a Floating IP for use as the Default Gateway

1. Using the WebUI, navigate to: *Cluster Configuration > Floating IPs*.

| | |
|--|---|
| New Floating IP | <input type="text" value="10.0.0.250"/> |
| Add as Disabled | <input type="checkbox"/> |
| <input type="button" value="Add Floating IP"/> | |

1. Specify the IP address you'd like to use for the default gateway, e.g. **10.0.0.250**.
2. Click **Add Floating IP**.

Configure the default gateway on each load balanced MagicMail server to use this address.

10.2. Configure the Virtual Services

Note

The prefix "Co" in the example labels can be replaced by the Telco's or ISP's name.

10.2.1. VIP 1 - Co_SMTP

Virtual Service (VIP) Configuration

1. Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
2. Enter the following details:

| Virtual Service | | |
|-------------------|--|-------------------|
| Label | <input type="text" value="Co_SMTP"/> | ? |
| IP Address | <input type="text" value="192.168.1.200"/> | ? |
| Ports | <input type="text" value="25"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |

3. Specify an appropriate *Label* for the Virtual Service, e.g. **Co_SMTP**.
4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
5. Set the *Ports* field to **25**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="25"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

- Specify an appropriate *Label* for the RIP, e.g. **Co_BE1**.
- Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
- Set the *Real Server Port* field to **25**.
- Leave all other settings at their default value.
- Click **Update**.
- Repeat these steps to add additional Real Server(s).

10.2.2. VIP 2 - Co_SUBMIT

Virtual Service (VIP) Configuration

- Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
- Enter the following details:

| | | |
|------------------------|--|---|
| Virtual Service | | |
| Label | <input type="text" value="Co_SUBMIT"/> | ? |
| IP Address | <input type="text" value="192.168.1.200"/> | ? |
| Ports | <input type="text" value="587"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |

- Specify an appropriate *Label* for the Virtual Service, e.g. **Co_SUBMIT**.

4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
5. Set the *Ports* field to **587**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="587"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

3. Specify an appropriate *Label* for the RIP, e.g. **Co_BE1**.
4. Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
5. Set the *Real Server Port* field to **587**.
6. Leave all other settings at their default value.
7. Click **Update**.
8. Repeat these steps to add additional Real Server(s).

10.2.3. VIP 3 - Co_SMTSPS



Virtual Service (VIP) Configuration

1. Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Virtual Service | | |
| Label | <input type="text" value="Co_SMTPS"/> | ? |
| IP Address | <input type="text" value="192.168.1.200"/> | ? |
| Ports | <input type="text" value="465"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |
| | | <input type="button" value="Cancel"/> <input type="button" value="Update"/> |

3. Specify an appropriate *Label* for the Virtual Service, e.g. **Co_SMTPS**.
4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
5. Set the *Ports* field to **465**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="465"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

- Specify an appropriate *Label* for the RIP, e.g. **Co_BE1**.
- Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
- Set the *Real Server Port* field to **465**.
- Leave all other settings at their default value.
- Click **Update**.
- Repeat these steps to add additional Real Server(s).

10.2.4. VIP 4 - Co_HTTP

Virtual Service (VIP) Configuration

- Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
- Enter the following details:

| | | |
|------------------------|--|---|
| Virtual Service | | |
| Label | <input type="text" value="Co_HTTP"/> | ? |
| IP Address | <input type="text" value="192.168.1.200"/> | ? |
| Ports | <input type="text" value="80"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |

- Specify an appropriate *Label* for the Virtual Service, e.g. **Co_HTTP**.

4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
5. Set the *Ports* field to **80**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="80"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

3. Specify an appropriate *Label* for the RIP, e.g. **Co_BE1**.
4. Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
5. Set the *Real Server Port* field to **80**.
6. Leave all other settings at their default value.
7. Click **Update**.
8. Repeat these steps to add additional Real Server(s).

10.2.5. VIP 5 - Co_HTTPS



Virtual Service (VIP) Configuration

1. Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Virtual Service | | |
| Label | <input type="text" value="Co_HTTPS"/> | ? |
| IP Address | <input type="text" value="192.168.1.200"/> | ? |
| Ports | <input type="text" value="443"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |
| | | <input type="button" value="Cancel"/> <input type="button" value="Update"/> |

3. Specify an appropriate *Label* for the Virtual Service, e.g. **Co_HTTPS**.
4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
5. Set the *Ports* field to **443**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="443"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

- Specify an appropriate *Label* for the RIP, e.g. **Co_BE1**.
- Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
- Set the *Real Server Port* field to **443**.
- Leave all other settings at their default value.
- Click **Update**.
- Repeat these steps to add additional Real Server(s).

10.2.6. VIP 6 - Co_POP3

Virtual Service (VIP) Configuration

- Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
- Enter the following details:

| | | |
|------------------------|--|---|
| Virtual Service | | |
| Label | <input type="text" value="Co_POP3"/> | ? |
| IP Address | <input type="text" value="192.168.1.200"/> | ? |
| Ports | <input type="text" value="110"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |

- Specify an appropriate *Label* for the Virtual Service, e.g. **Co_POP3**.

4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
5. Set the *Ports* field to **110**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="110"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

3. Specify an appropriate *Label* for the RIP, e.g. **Co_BE1**.
4. Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
5. Set the *Real Server Port* field to **110**.
6. Leave all other settings at their default value.
7. Click **Update**.
8. Repeat these steps to add additional Real Server(s).

10.2.7. VIP 7 - Co_IMAP

Virtual Service (VIP) Configuration

1. Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Virtual Service | | |
| Label | <input type="text" value="Co_IMAP"/> | ? |
| IP Address | <input type="text" value="192.168.1.200"/> | ? |
| Ports | <input type="text" value="143"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |
| | | <input type="button" value="Cancel"/> <input type="button" value="Update"/> |

3. Specify an appropriate *Label* for the Virtual Service, e.g. **Co_IMAP**.
4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
5. Set the *Ports* field to **143**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="143"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

3. Specify an appropriate *Label* for the RIP, e.g. **Co_BE1**.
4. Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
5. Set the *Real Server Port* field to **143**.
6. Leave all other settings at their default value.
7. Click **Update**.
8. Repeat these steps to add additional Real Server(s).

10.2.8. VIP 8 - Co_POP3S

Virtual Service (VIP) Configuration

1. Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Virtual Service | | |
| Label | <input type="text" value="Co_POP3S"/> | ? |
| IP Address | <input type="text" value="192.169.1.200"/> | ? |
| Ports | <input type="text" value="995"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |

3. Specify an appropriate *Label* for the Virtual Service, e.g. **Co_POP3S**.

4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
5. Set the *Ports* field to **995**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="995"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

3. Specify an appropriate *Label* for the RIP, e.g. **Co_BE1**.
4. Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
5. Set the *Real Server Port* field to **995**.
6. Leave all other settings at their default value.
7. Click **Update**.
8. Repeat these steps to add additional Real Server(s).

10.2.9. VIP 9 - Co_IMAPS

Virtual Service (VIP) Configuration

1. Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
2. Enter the following details:

| Virtual Service | |
|-------------------|--|
| Label | <input type="text" value="Co_IMAPS"/> ? |
| IP Address | <input type="text" value="192.168.1.200"/> ? |
| Ports | <input type="text" value="993"/> ? |
| Protocol | |
| Protocol | <input type="text" value="TCP"/> ? |
| Forwarding | |
| Forwarding Method | <input type="text" value="NAT"/> ? |

3. Specify an appropriate *Label* for the Virtual Service, e.g. **Co_IMAPS**.
4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
5. Set the *Ports* field to **993**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="993"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

3. Specify an appropriate *Label* for the RIP, e.g. **Co_BE1**.
4. Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
5. Set the *Real Server Port* field to **993**.
6. Leave all other settings at their default value.
7. Click **Update**.
8. Repeat these steps to add additional Real Server(s).

10.2.10. VIP 10 - Co_RADIUS

Virtual Service (VIP) Configuration

1. Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Virtual Service | | |
| Label | <input type="text" value="Co_RADIUS"/> | ? |
| IP Address | <input type="text" value="192.168.1.200"/> | ? |
| Ports | <input type="text" value="1812,1813 1645,1646"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="UDP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |

3. Specify an appropriate *Label* for the Virtual Service, e.g. **Co_RADIUS**.

- Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
- Set the *Ports* field to **1812,1813,1645,1646**.







 **Note**

Ports 1645 and 1646 are only needed when the RADIUS plugin is installed on the MagicMail servers.

- Set the *Protocol* set to **UDP**.
- Set the *Forwarding Method* to **NAT**.
- Click **Update** to create the Virtual Service.
- Now click **Modify** next to the newly created VIP.
- Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
- Leave all other settings at their default value.
- Click **Update**.

Configure the Associated Real Servers (RIPs)

- Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
- Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE_RADIUS1"/> |  |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> |  |
| Real Server Port | <input type="text"/> |  |
| Weight | <input type="text" value="100"/> |  |
| Minimum Connections | <input type="text" value="0"/> |  |
| Maximum Connections | <input type="text" value="0"/> |  |

- Specify an appropriate *Label* for the RIP, e.g. **Co_BE_RADIUS1**.
- Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
- Leave the *Real Server Port* field blank.
- Leave all other settings at their default value.
- Click **Update**.

- Repeat these steps to add additional Real Server(s).

10.2.11. VIP 11 - Co_DNS

Note

VIP 11 is only required when the DNS plugin is installed on the MagicMail servers.

Virtual Service (VIP) Configuration

- Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
- Enter the following details:

| | | |
|------------------------|--|---|
| Virtual Service | | |
| Label | <input type="text" value="Co_DNS"/> | ? |
| IP Address | <input type="text" value="192.168.1.200"/> | ? |
| Ports | <input type="text" value="53"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP/UDP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |
| | | <input type="button" value="Cancel"/> <input type="button" value="Update"/> |

- Specify an appropriate *Label* for the Virtual Service, e.g. **Co_DNS**.
- Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
- Set the *Ports* field to **53**.
- Set the *Protocol* to **TCP/UDP**.
- Set the *Forwarding Method* to **NAT**.
- Click **Update** to create the Virtual Service.
- Now click **Modify** next to the newly created VIP.
- Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
- Leave all other settings at their default value.
- Click **Update**.

Configure the Associated Real Servers (RIPs)



1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|---|---|
| Label | <input type="text" value="Co_BE_DNS1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="53"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

3. Specify an appropriate *Label* for the RIP, e.g. **Co_BE_DNS1**.
4. Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
5. Set the *Real Server Port* field to **53**.
6. Leave all other settings at their default value.
7. Click **Update**.
8. Repeat these steps to add additional Real Server(s).

10.2.12. VIP 12 - Co_DNSDB

Virtual Service (VIP) Configuration

1. Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
2. Enter the following details:

| Virtual Service | | |
|-------------------|--|-------------------|
| Label | <input type="text" value="Co_DNSDB"/> | ? |
| IP Address | <input type="text" value="192.168.1.200"/> | ? |
| Ports | <input type="text" value="5432"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |

3. Specify an appropriate *Label* for the Virtual Service, e.g. **Co_DNSDB**.
4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.200**.
5. Set the *Ports* field to **5432**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **125**, i.e. 125 seconds.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|---|---|
| Label | <input type="text" value="Co_BE_DNSDB1"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text" value="5432"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

3. Specify an appropriate *Label* for the RIP, e.g. **Co_BE_DNSDB1**.
4. Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
5. Set the *Real Server Port* field to **5432**.
6. Leave all other settings at their default value.
7. Click **Update**.
8. Repeat these steps to add additional Real Server(s).

11. Testing & Verification

Note

For additional guidance on diagnosing and resolving any issues you may have, please also refer to [Diagnostics & Troubleshooting](#).

11.1. Accessing MagicMail via the Load Balancer

Verify that clients can connect to the MagicMail servers via the load balancer.

Note

Make sure that DNS is updated so that FQDNs point at the VIPs rather than individual servers.

11.2. Using System Overview

The System Overview can be viewed in the WebUI. It shows a graphical view of all Virtual Services & the associated Real Servers (i.e. the MagicMail servers) and shows the state/health of each server as well as the overall state of each cluster. The example below shows that all servers are healthy (green) and available to accept connections:

| | VIRTUAL SERVICE | IP | PORTS | CONNS | PROTOCOL | METHOD | MODE | |
|---|-----------------|---------------|-----------|--------|----------|---------|------|--|
| ↑ | Co_SMTP | 192.168.1.200 | 25 | 0 | TCP | Layer 4 | NAT | |
| | REAL SERVER | IP | PORTS | WEIGHT | CONNS | | | |
| ↑ | CO_BE | 10.0.0.11 | 25 | 100 | 0 | Drain | Halt | |
| ↑ | CO_FE1 | 10.0.0.12 | 25 | 100 | 0 | Drain | Halt | |
| ↑ | CO_FE2 | 10.0.0.13 | 25 | 100 | 0 | Drain | Halt | |
| ↑ | Co_SUBMIT | 192.168.1.200 | 587 | 0 | TCP | Layer 4 | NAT | |
| ↑ | Co_SMTPS | 192.168.1.200 | 465 | 0 | TCP | Layer 4 | NAT | |
| ↑ | Co_HTTP | 192.168.1.200 | 80 | 0 | TCP | Layer 4 | NAT | |
| ↑ | Co_HTTPS | 192.168.1.200 | 443 | 0 | TCP | Layer 4 | NAT | |
| ↑ | Co_POP3 | 192.168.1.200 | 110 | 0 | TCP | Layer 4 | NAT | |
| ↑ | Co_IMAP | 192.168.1.200 | 143 | 0 | TCP | Layer 4 | NAT | |
| ↑ | Co_IMAPS | 192.168.1.200 | 993 | 0 | TCP | Layer 4 | NAT | |
| ↑ | Co_POP3S | 192.168.1.200 | 995 | 0 | TCP | Layer 4 | NAT | |
| ↑ | Co_RADIUS | 192.168.1.200 | 1812,1813 | 0 | UDP | Layer 4 | NAT | |
| ↑ | Co_DNS | 192.168.1.200 | 53 | 0 | TCP | Layer 4 | NAT | |
| ↑ | Co_DNSDB | 192.168.1.200 | 5432 | 0 | TCP | Layer 4 | NAT | |

If one of the servers within a cluster fails its health check, that server will be colored red and the cluster will be colored yellow as shown below:

| | | | | | | | | |
|---|-------------|---------------|-------|--------|-------|---------|------|--|
| ⚠ | Co_SMTP | 192.168.1.200 | 25 | 0 | TCP | Layer 4 | NAT | |
| | REAL SERVER | IP | PORTS | WEIGHT | CONNS | | | |
| ↑ | CO_BE | 10.0.0.11 | 25 | 100 | 0 | Drain | Halt | |
| ↑ | CO_FE1 | 10.0.0.12 | 25 | 100 | 0 | Drain | Halt | |
| ↓ | CO_FE2 | 10.0.0.13 | 25 | 100 | 0 | Drain | Halt | |

12. 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.



13. Further Documentation

For additional information, please refer to the [Administration Manual](#).



14. Appendix

14.1. Configuring HA - Adding a Secondary Appliance

Our recommended configuration is to use a clustered HA pair of load balancers to provide a highly available and resilient load balancing solution. We recommend that the Primary appliance is fully configured first, then the Secondary appliance can be added to create an HA pair. Once the HA pair is configured, load balanced services must be configured and modified on the Primary appliance. The Secondary appliance will be automatically kept in sync.

Note

For Enterprise Azure, the HA pair should be configured first. For more information, please refer to the Azure Quick Start/Configuration Guide available in the [documentation library](#)

The clustered HA pair uses Heartbeat to determine the state of the other appliance. Should the active device (normally the Primary) suffer a failure, the passive device (normally the Secondary) will take over.

14.1.1. Non-Replicated Settings

A number of settings are not replicated as part of the Primary/Secondary pairing process and therefore must be manually configured on the Secondary appliance. These are listed by WebUI menu option in the table below:

| WebUI Main Menu Option | Sub Menu Option | Description |
|------------------------|-----------------------------------|---|
| Local Configuration | Hostname & DNS | Hostname and DNS settings |
| Local Configuration | Network Interface Configuration | Interface IP addresses, bonding configuration and VLANs |
| Local Configuration | Routing | Default gateways and static routes |
| Local Configuration | System Date & time | Time and date related settings |
| Local Configuration | Physical – Advanced Configuration | Various appliance settings |
| Local Configuration | Portal Management | Portal management settings |
| Local Configuration | Security | Security settings |
| Local Configuration | SNMP Configuration | SNMP settings |
| Local Configuration | Graphing | Graphing settings |
| Local Configuration | License Key | Appliance licensing |
| Maintenance | Backup & Restore | Local XML backups |
| Maintenance | Software Updates | Appliance software updates |
| Maintenance | Fallback Page | Fallback page configuration |
| Maintenance | Firewall Script | Firewall (iptables) configuration |
| Maintenance | Firewall Lockdown Wizard | Appliance management lockdown settings |

⚠ Important

Make sure that where any of the above have been configured on the Primary appliance, they're also configured on the Secondary.

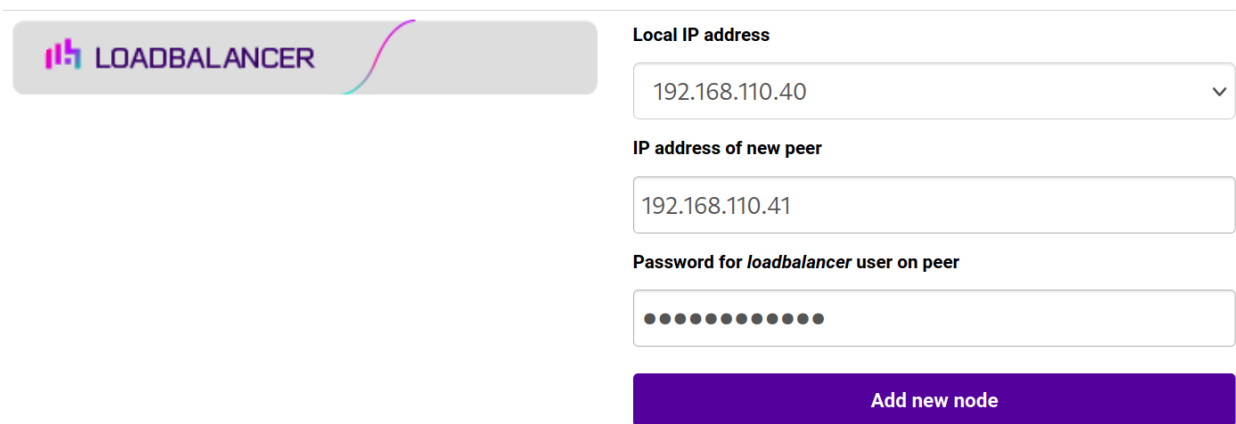
14.1.2. Configuring the HA Clustered Pair

📌 Note

If you have already run the firewall lockdown wizard on either appliance, you'll need to ensure that it is temporarily disabled on both appliances whilst performing the pairing process.

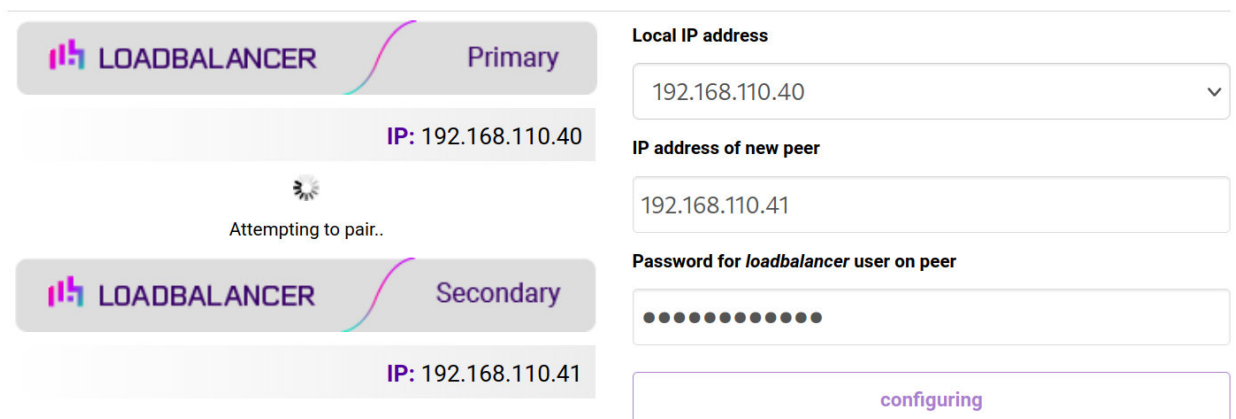
1. Deploy a second appliance that will be the Secondary and configure initial network settings.
2. Using the WebUI on the Primary appliance, navigate to: *Cluster Configuration > High-Availability Configuration*.

Create a Clustered Pair



3. Specify the IP address and the *loadbalancer* user's password for the Secondary (peer) appliance as shown in the example above.
4. Click **Add new node**.
5. The pairing process now commences as shown below:

Create a Clustered Pair



6. Once complete, the following will be displayed on the Primary appliance:

High Availability Configuration - primary

The screenshot displays a configuration interface for High Availability. At the top, it says "High Availability Configuration - primary". Below this, there are two main components: a Primary Loadbalancer and a Secondary Loadbalancer. The Primary Loadbalancer is represented by a grey rounded rectangle with the "LOADBALANCER" logo on the left, a pink-to-purple gradient arc on the right, and the word "Primary" in bold. Below it, the IP address "IP: 192.168.110.40" is shown. The Secondary Loadbalancer is represented by a similar grey rounded rectangle with the "LOADBALANCER" logo, a pink-to-purple gradient arc, and the word "Secondary" in bold. Below it, the IP address "IP: 192.168.110.41" is shown. To the right of these two components is a prominent pink button with the text "Break Clustered Pair".

7. To finalize the configuration, restart heartbeat and any other services as prompted in the "Commit changes" message box at the top of the screen.

Note

Clicking the **Restart Heartbeat** button on the Primary appliance will also automatically restart heartbeat on the Secondary appliance.

Note

For more details on configuring HA with 2 appliances, please refer to [Appliance Clustering for HA](#).

Note

For details on testing and verifying HA, please refer to [Clustered Pair Diagnostics](#).

14.2. VIPs for Trouble-shooting

These VIPs are used for trouble-shooting purposes only.

14.2.1. VIP 13 - Co_FE_Direct

This VIP listens on all required ports and sends all traffic to a specific Frontend server.

Virtual Service (VIP) Configuration

1. Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
2. Enter the following details:

| Virtual Service | |
|-------------------|---|
| Label | <input type="text" value="Co_FE_Direct"/> ? |
| IP Address | <input type="text" value="192.168.1.12"/> ? |
| Ports | <input type="text" value="25,587,465,110,143,993,995"/> ? |
| Protocol | |
| Protocol | <input type="text" value="TCP"/> ? |
| Forwarding | |
| Forwarding Method | <input type="text" value="NAT"/> ? |

3. Specify an appropriate *Label* for the Virtual Service, e.g. **Co_FE_Direct**.
4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.12**.
5. Set the *Ports* field to **25,587,465,110,143,993,995,80,443**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **300**, i.e. 5 minutes.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration* > *Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_FE"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.12"/> | ? |
| Real Server Port | <input type="text"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

3. Specify an appropriate *Label* for the RIP, e.g. **Co_FE**.
4. Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.12**.
5. Leave the *Real Server Port* field blank.
6. Leave all other settings at their default value.
7. Click **Update**.

14.2.2. VIP 14 - Co_BE_Direct

This VIP listens on all required ports and sends all traffic to a specific Backend Server.

Virtual Service (VIP) Configuration

1. Using the WebUI, navigate to *Cluster Configuration > Layer 4 – Virtual Services* and click **Add a new Virtual Service**.
2. Enter the following details:

| | | |
|------------------------|---|---|
| Virtual Service | | |
| Label | <input type="text" value="Co_BE_Direct"/> | ? |
| IP Address | <input type="text" value="192.168.1.11"/> | ? |
| Ports | <input type="text" value="25,587,465,110,143,993,995"/> | ? |
| Protocol | | |
| Protocol | <input type="text" value="TCP"/> | ? |
| Forwarding | | |
| Forwarding Method | <input type="text" value="NAT"/> | ? |

3. Specify an appropriate *Label* for the Virtual Service, e.g. **Co_BE_Direct**.

4. Set the *Virtual Service IP Address* field to the required IP address, e.g. **192.168.1.11**.
5. Set the *Ports* field to **25,587,465,110,143,993,995,80,443**.
6. Leave the *Protocol* set to **TCP**.
7. Set the *Forwarding Method* to **NAT**.
8. Click **Update** to create the Virtual Service.
9. Now click **Modify** next to the newly created VIP.
10. Scroll to the *Persistence* section.
 - Ensure that the *Enable* checkbox is enabled (checked).
 - Set the *Timeout* to **300**, i.e. 5 minutes.
11. Leave all other settings at their default value.
12. Click **Update**.

Configure the Associated Real Servers (RIPs)

1. Using the WebUI, navigate to: *Cluster Configuration > Layer 4 – Real Servers* and click **Add a new Real Server** next to the newly created VIP.
2. Enter the following details:

| | | |
|------------------------|--|---|
| Label | <input type="text" value="Co_BE"/> | ? |
| Real Server IP Address | <input type="text" value="10.0.0.11"/> | ? |
| Real Server Port | <input type="text"/> | ? |
| Weight | <input type="text" value="100"/> | ? |
| Minimum Connections | <input type="text" value="0"/> | ? |
| Maximum Connections | <input type="text" value="0"/> | ? |

3. Specify an appropriate *Label* for the RIP, e.g. **Co_BE**.
4. Set the *Real Server IP Address* field to the required IP address, e.g. **10.0.0.11**.
5. Leave the *Real Server Port* field blank.
6. Leave all other settings at their default value.
7. Click **Update**.

15. Document Revision History

| Version | Date | Change | Reason for Change | Changed By |
|---------|------------------|-----------------|-------------------|------------|
| 1.0.0 | 11 February 2025 | Initial version | | RJC |





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