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1. About this Guide

This guide details the steps required to configure a load balanced OpenText RightFax environment utilizing Loadbalancer.org appliances. It covers the configuration of the load balancers and also any OpenText RightFax 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 OpenText RightFax. For full specifications of available models please refer to https://www.loadbalancer.org/products.

Some features may not be supported in all cloud platforms due to platform specific limitations, please check with Loadbalancer.org support for further details.

3. Loadbalancer.org Software Versions Supported

- V8.5.3 and later

4. OpenText RightFax Software Versions Supported

- OpenText RightFax 20.2.0.0 to 20.2.2.277

5. OpenText RightFax

Installed on a local area network (LAN), OpenText™ Rightfax™ lets users, applications, and systems connected to the network send and receive paperless, digital faxes. The enterprise fax server software connects to onsite analog or digital telephony, voice-over-IP telephony, or the cloud to transmit the fax securely. Integrated with email for users and back-end systems for application faxing, RightFax significantly reduces the total cost of faxing across an enterprise.

6. Load Balancing OpenText RightFax

Note: It’s highly recommended that you have a working OpenText RightFax environment first before implementing the load balancer.

Persistence (aka Server Affinity)

OpenText RightFax does not require session affinity at the load balancing layer.

Virtual Service (VIP) Requirements

To provide load balancing and HA for OpenText RightFax, the following VIPs are required:

- Client Access (HTTP)
- Client Access (HTTPS)
- Network File Storage (SMB/LPD)
Port Requirements

The following table shows the ports that are load balanced:

<table>
<thead>
<tr>
<th>Ports</th>
<th>Protocols</th>
<th>Use</th>
</tr>
</thead>
<tbody>
<tr>
<td>80</td>
<td>TCP/HTTP</td>
<td>Provides page rendering services, auditing, reporting, HTTP transfer fallback capability for clients that cannot establish OpenText Fuel connection with the server</td>
</tr>
<tr>
<td>443</td>
<td>TCP/HTTPS</td>
<td>Provides page rendering services, auditing, reporting, HTTPS transfer fallback capability for clients that cannot establish OpenText Fuel connection with the server</td>
</tr>
<tr>
<td>445/515</td>
<td>TCP/SMB, TCP/LPD</td>
<td>Network accessible file storage for Secure MFT to store the file assets</td>
</tr>
<tr>
<td>10520-10521</td>
<td>TCP</td>
<td>Server Module (client access)</td>
</tr>
</tbody>
</table>

7. Deployment Concept

![Inbound connections diagram](diagram.png)

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 the section Configuring HA - Adding a Slave Appliance in the appendix 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 OpenText RightFax, using layer 4 DR mode is recommended. It is also possible to use layer 7 SNAT mode, however the performance of this setup is not as great as layer 4 DR mode. 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 Appliance Configuration for OpenText RightFax – Using Layer 4 DR Mode, and for configuring using layer 7 SNAT mode refer to the section Appliance Configuration for OpenText RightFax – Using Layer 7 SNAT Mode.

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 Server’s own IP address and the VIP.
- The Real Servers 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. For more information please refer to DR Mode Considerations.
- 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.

- Layer 7 SNAT mode is a full proxy and therefore load balanced Real Servers do not need to be changed in any way.
- Because layer 7 SNAT mode is a full proxy any server in the cluster can be on any accessible subnet including across the Internet or WAN.
- Layer 7 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 balancer’s 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 load balancer can be configured to provide the actual client IP address to the Real Servers in 2 ways. Either by inserting a header that contains the client’s source IP address, or by modifying the Source Address field of the IP packets and replacing the IP address of the load balancer with the IP address of the client. For more information on these methods please refer to Transparency at Layer 7.
- Layer 7 SNAT mode can be deployed using either a 1-arm or 2-arm configuration.
- You should not use the same RIP:PORT combination for layer 7 SNAT mode VIPs and layer 4 SNAT mode VIPs because the required firewall rules conflict.
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 the real servers are located in remote routed networks, then SNAT mode is recommended.

If the load balancer is deployed in AWS, Azure, or GCP, layer 7 SNAT mode must be used as layer 4 direct routing is not currently possible on these platforms.

9. Configuring OpenText RightFax for Load Balancing

To enable the RightFax servers to be accessed via a shared name (e.g. faxserver-vip), the following steps must be completed:

Windows 2019

Host entries must be added to the local hosts file on each RightFax server. For example, if you have 2 RightFax servers: 192.168.100.20 and 192.168.100.21, add the following entries to the hosts files:

On the 192.168.100.20 server 192.168.100.20 faxserver-vip 192.168.100.20 faxserver-vip.domain.com

On the 192.168.100.21 server 192.168.100.21 faxserver-vip 192.168.100.21 faxserver-vip.domain.com

where faxserver-vip is the DNS name clients use to access the load balanced RightFax servers.

10. Loadbalancer.org Appliance – the Basics

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 1 CPU, 2GB 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 The Virtual Appliance - Hypervisor Deployment and the ReadMe.txt text file included in the VA download for more detailed information on deploying the VA using various Hypervisors.

Note

For the VA, 4 NICs are included but only eth0 is connected by default at power up. If the other NICs are required, these should be connected using the network configuration screen within the Hypervisor.
Initial Network Configuration

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

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

Accessing the WebUI

The WebUI is accessed using a web browser. Appliance authentication is based on Apache .htaccess files. User admin tasks such as adding users and changing passwords can be performed using the WebUI menu option: Maintenance > Passwords.

Note A number of compatibility issues have been found with various versions of Internet Explorer. The WebUI has been tested and verified using both Chrome & Firefox.

Note If required, users can also be authenticated against LDAP, LDAPS, Active Directory or Radius. For more information please refer to External Authentication.

1. Using a browser, access the WebUI using the following URL:


2. Log in to the WebUI:

   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:
Note

The WebUI for the VA is shown, the hardware and cloud appliances are very similar. The yellow licensing related message is platform & model dependant.

3. You'll be asked if you want to run the Setup Wizard. If you click Accept the Layer 7 Virtual Service configuration wizard will start. If you want to configure the appliance manually, simple click Dismiss.

Main Menu Options
System Overview - Displays a graphical summary of all VIPs, RIPv 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 & RIPv
Maintenance - Perform maintenance tasks such as service restarts and taking backups
View Configuration - Display the saved appliance configuration settings
Reports - View various appliance reports & graphs
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 the section Configuring HA - Adding a Slave Appliance of the appendix.

11. Appliance Configuration for OpenText RightFax – Using Layer 4 DR Mode

Configuring VIP 1 - Client Access (HTTP)

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. access_http

3. Set the Virtual Service IP Address field to the required IP address, e.g. 192.168.85.140

4. Set the Ports field to 80

5. Leave the Protocol set to TCP

6. Leave the Forwarding Method set to Direct Routing

7. Click Update to create the virtual service

**Layer 4 - Add a new Virtual Service**

<table>
<thead>
<tr>
<th>Virtual Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Label</td>
</tr>
<tr>
<td>IP Address</td>
</tr>
<tr>
<td>Ports</td>
</tr>
</tbody>
</table>

8. Click Modify next to the newly created VIP

9. Ensure that the Persistence Enable checkbox is not checked

10. 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. rightfax_server_1
3. Set the Real Server IP Address field to the required IP address, e.g. 192.168.85.190
4. Click Update
5. Repeat these steps to add additional RightFax servers as required

<table>
<thead>
<tr>
<th>Label</th>
<th>rightfax_server_1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Server IP Address</td>
<td>192.168.85.190</td>
</tr>
<tr>
<td>Weight</td>
<td>100</td>
</tr>
<tr>
<td>Minimum Connections</td>
<td>0</td>
</tr>
<tr>
<td>Maximum Connections</td>
<td>0</td>
</tr>
</tbody>
</table>

Configuring VIP 2 - Client Access (HTTPS)
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. access_https
3. Set the Virtual Service IP Address field to the required IP address, e.g. 192.168.85.140
4. Set the Ports field to 443
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 **Modify** next to the newly created VIP
9. Ensure that the **Persistence Enable** checkbox is not checked
10. 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. **rightfax_server_1**

3. Set the **Real Server IP Address** field to the required IP address, e.g. **192.168.85.190**

4. Click **Update**

5. Repeat these steps to add additional RightFax servers as required
Configuring VIP 3 - Network File Storage (SMB/LPD)

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. `net_filestorage`
3. Set the **Virtual Service IP Address** field to the required IP address, e.g. `192.168.85.140`
4. Set the **Ports** field to `445,515`
5. Leave the **Protocol** set to **TCP**
6. Leave the **Forwarding Method** set to **Direct Routing**
7. Click **Update** to create the virtual service

<table>
<thead>
<tr>
<th>Virtual Service</th>
<th>net_filestorage</th>
</tr>
</thead>
<tbody>
<tr>
<td>IP Address</td>
<td>192.168.85.140</td>
</tr>
<tr>
<td>Ports</td>
<td>445,515</td>
</tr>
<tr>
<td>Protocol</td>
<td>TCP</td>
</tr>
<tr>
<td>Forwarding</td>
<td>Direct Routing</td>
</tr>
</tbody>
</table>

8. Click **Modify** next to the newly created VIP
9. Ensure that the **Persistence Enable** checkbox is not checked
10. 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. `rightfax_server_1`
3. Set the **Real Server IP Address** field to the required IP address, e.g. `192.168.85.190`
4. Click **Update**
5. Repeat these steps to add additional RightFax servers as required
Configuring VIP 4 - Client Access (Server Module)

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. access_srv_mod.
3. Set the Virtual Service IP Address field to the required IP address, e.g. 192.168.85.140.
4. Set the Ports field to 10520-10521.
5. Leave the Protocol set to TCP.
7. Click Update to create the virtual service.
8. Click Modify next to the newly created VIP.
9. Ensure that the Persistence Enable checkbox is not checked

10. 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. rightfax_server_1
3. Set the Real Server IP Address field to the required IP address, e.g. 192.168.85.190
4. Click Update
5. Repeat these steps to add additional RightFax servers as required

```
Layer 4 Add a new Real Server - access_srv_mod

<table>
<thead>
<tr>
<th>Label</th>
<th>rightfax_server_1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Server IP Address</td>
<td>192.168.85.190</td>
</tr>
<tr>
<td>Weight</td>
<td>100</td>
</tr>
<tr>
<td>Minimum Connections</td>
<td>0</td>
</tr>
<tr>
<td>Maximum Connections</td>
<td>0</td>
</tr>
</tbody>
</table>
```

12. Appliance Configuration for OpenText RightFax – Using Layer 7 SNAT Mode

Configuring VIP 1 - Client Access (HTTP)

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. access_http
3. Set the Virtual Service IP Address field to the required IP address, e.g. 192.168.85.150
4. Set the Ports field to 80
5. Set the Layer 7 Protocol to TCP Mode
6. Click Update to create the virtual service
7. Click **Modify** next to the newly created VIP

8. Set **Persistence Mode** to **None**

9. 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. **rightfax_server_1**

3. Set the **Real Server IP Address** field to the required IP address, e.g. **192.168.85.190**

4. Click **Update**

5. Repeat these steps to add additional RightFax servers as required

**Layer 7 Add a new Real Server - access_http-1**

<table>
<thead>
<tr>
<th>Label</th>
<th>rightfax_server_1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Server IP Address</td>
<td>192.168.85.190</td>
</tr>
<tr>
<td>Real Server Port</td>
<td></td>
</tr>
<tr>
<td>Re-Encrypt to Backend</td>
<td>0</td>
</tr>
<tr>
<td>Weight</td>
<td>100</td>
</tr>
</tbody>
</table>

**Configuring VIP 2 - Client Access (HTTPS)**
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. access_https

3. Set the Virtual Service IP Address field to the required IP address, e.g. 192.168.85.150

4. Set the Ports field to 443

5. Set the Layer 7 Protocol to TCP Mode

6. Click Update to create the virtual service

7. Click Modify next to the newly created VIP

8. Set Persistence Mode to None

9. 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. rightfax_server_1

3. Set the Real Server IP Address field to the required IP address, e.g. 192.168.85.190

4. Click Update

5. Repeat these steps to add additional RightFax servers as required
Configuring VIP 3 - Network File Storage (SMB/LPD)

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. net_filestorage

3. Set the Virtual Service IP Address field to the required IP address, e.g. 192.168.85.150

4. Set the Ports field to 445,515

5. Set the Layer 7 Protocol to TCP Mode

6. Click Update to create the virtual service

7. Click Modify next to the newly created VIP

8. Set Persistence Mode to None

9. 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. rightfax_server_1
3. Set the Real Server IP Address field to the required IP address, e.g. 192.168.85.190
4. Click Update
5. Repeat these steps to add additional RightFax servers as required

Configuring VIP 4 - Client Access (Server Module)
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. access_srv_mod
3. Set the Virtual Service IP Address field to the required IP address, e.g. 192.168.85.150
4. Set the Ports field to 10520-10521
5. Set the Layer 7 Protocol to TCP Mode
6. Click Update to create the virtual service
Layer 7 - Add a new Virtual Service

<table>
<thead>
<tr>
<th>Virtual Service</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manual Configuration</td>
</tr>
<tr>
<td>Label</td>
</tr>
<tr>
<td>IP Address</td>
</tr>
<tr>
<td>Ports</td>
</tr>
<tr>
<td>Protocol</td>
</tr>
<tr>
<td>Layer 7 Protocol</td>
</tr>
</tbody>
</table>

7. Click **Modify** next to the newly created VIP
8. Set **Persistence Mode** to **None**
9. 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. **rightfax_server_1**
3. Set the **Real Server IP Address** field to the required IP address, e.g. **192.168.85.190**
4. Click **Update**
5. Repeat these steps to add additional RightFax servers as required

Layer 7 Add a new Real Server - access_srv_mod-1

<table>
<thead>
<tr>
<th>Label</th>
<th>rightfax_server_1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Real Server IP Address</td>
<td>192.168.85.190</td>
</tr>
<tr>
<td>Real Server Port</td>
<td>☐</td>
</tr>
<tr>
<td>Re-Encrypt to Backend</td>
<td>☐</td>
</tr>
<tr>
<td>Weight</td>
<td>100</td>
</tr>
</tbody>
</table>
13. Testing & Verification

Using System Overview

The System Overview can be viewed in the WebUI. It shows a graphical view of all VIPs & RIPS (i.e. the RightFax servers) and shows the state/health of each server as well as the state of the cluster as a whole.

The example below shows a layer 4 DR mode configuration load balancing a pair of RightFax servers, where both servers are healthy and available to accept connections:

<table>
<thead>
<tr>
<th>Virtual Service</th>
<th>IP</th>
<th>Ports</th>
<th>ConnS</th>
<th>Protocol</th>
<th>Method</th>
<th>Mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>access_http</td>
<td>192.168.85.140</td>
<td>80</td>
<td>0</td>
<td>TCP</td>
<td>Layer 4</td>
<td>DR</td>
</tr>
<tr>
<td>Real Server</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>rightfax_server_1</td>
<td>192.168.85.190</td>
<td>80</td>
<td>100</td>
<td></td>
<td>Drain</td>
<td>Halt</td>
</tr>
<tr>
<td>rightfax_server_2</td>
<td>192.168.85.191</td>
<td>80</td>
<td>100</td>
<td></td>
<td>Drain</td>
<td>Halt</td>
</tr>
</tbody>
</table>

The example below shows a layer 7 SNAT mode configuration load balancing a pair of RightFax servers, where both 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


16. Conclusion

Loadbalancer.org appliances provide a very cost effective solution for highly available load balanced OpenText RightFax environments.
17. Appendix

Configuring HA - Adding a Slave 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 should be configured first, then the Slave should be added. Once the Primary and Slave are paired, all load balanced services configured on the Primary are automatically replicated to the Slave over the network using SSH/SCP.

Note

For Enterprise Azure, the HA pair should be configured first. In Azure, when creating a VIP using an HA pair, 2 private IPs must be specified – one for the VIP when it’s active on the Primary and one for the VIP when it’s active on the Slave. Configuring the HA pair first, enables both IPs to be specified when the VIP is created.

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 Slave) will take over.

Note

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

<table>
<thead>
<tr>
<th>WebUI Main Menu Option</th>
<th>Sub Menu Option</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Local Configuration</td>
<td>Hostname &amp; DNS</td>
<td>Hostname and DNS settings</td>
</tr>
<tr>
<td>Local Configuration</td>
<td>Network Interface</td>
<td>All network settings including IP address(es), bonding configuration</td>
</tr>
<tr>
<td></td>
<td>Configuration</td>
<td>and VLANs</td>
</tr>
<tr>
<td>Local Configuration</td>
<td>Routing</td>
<td>Routing configuration including default gateways and static routes</td>
</tr>
<tr>
<td>Local Configuration</td>
<td>System Date &amp; time</td>
<td>All time and date related settings</td>
</tr>
<tr>
<td>Local Configuration</td>
<td>Physical – Advanced</td>
<td>Various settings including Internet Proxy, Management Gateway,</td>
</tr>
<tr>
<td></td>
<td>Configuration</td>
<td>Firewall connection tracking table size, NIC offloading, SMTP relay,</td>
</tr>
<tr>
<td></td>
<td></td>
<td>logging and Syslog Server</td>
</tr>
<tr>
<td>Local Configuration</td>
<td>Security</td>
<td>Appliance security settings</td>
</tr>
<tr>
<td>Local Configuration</td>
<td>SNMP Configuration</td>
<td>Appliance SNMP settings</td>
</tr>
<tr>
<td>Local Configuration</td>
<td>Graphing</td>
<td>Appliance graphing settings</td>
</tr>
<tr>
<td>Local Configuration</td>
<td>License Key</td>
<td>Appliance licensing</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Software Updates</td>
<td>Appliance software update management</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Firewall Script</td>
<td>Appliance firewall (iptables) configuration</td>
</tr>
<tr>
<td>Maintenance</td>
<td>Firewall Lockdown Wizard</td>
<td>Appliance management lockdown settings</td>
</tr>
</tbody>
</table>

To add a Slave node - i.e. create a highly available clustered pair:
1. Deploy a second appliance that will be the Slave and configure initial network settings
2. Using the WebUI, navigate to: Cluster Configuration > High-Availability Configuration

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

6. Once complete, the following will be displayed:

7. To finalize the configuration, restart heartbeat and any other services as prompted in the blue message box at
Clicking the **Restart Heartbeat** button on the Primary appliance will also automatically restart heartbeat on the Slave appliance.

For more details on configuring HA with 2 appliances, please refer to *Appliance Clustering for HA*. 
# 18. Document Revision History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Change</th>
<th>Reason for Change</th>
<th>Changed By</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.0.0</td>
<td>26 August 2021</td>
<td>Initial version</td>
<td></td>
<td>NH, AH</td>
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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.