LOADBALANCER

DEPLOYMENT BRIEF

# Load Balancing Oracle PeopleSoft

Version 1.0.0

# Table of Contents


1. About this Brief . . . 3
2. Loadbalancer.org Appliances Supported . . . 3
3. Software Versions Supported . . . 3
    3.1. Loadbalancer.org Appliance . . . 3
    3.2. Oracle PeopleSoft . . . 3
4. Oracle PeopleSoft . . . 3
5. Load Balancing Oracle PeopleSoft . . . 3
    5.1. Persistence (aka Server Affinity) . . . 4
    5.2. Virtual Service (VIP) Requirements . . . 4
    5.3. Port Requirements . . . 4
6. Deployment Concept . . . 4
7. Load Balancer Deployment Methods . . . 4
    7.1. Layer 7 SNAT Mode . . . 5
8. Loadbalancer.org Appliance – the Basics . . . 6
    8.1. Virtual Appliance . . . 6
    8.2. Initial Network Configuration . . . 6
    8.3. Accessing the Appliance WebUI . . . 6
        8.3.1. Main Menu Options . . . 8
    8.4. Appliance Software Update . . . 8
        8.4.1. Online Update . . . 8
        8.4.2. Offline Update . . . 9
    8.5. Ports Used by the Appliance . . . 9
    8.6. HA Clustered Pair Configuration . . . 10
9. Appliance Configuration for Oracle PeopleSoft . . . 10
    9.1. Configuring the Virtual Service (VIP) . . . 10
    9.2. Defining the Real Servers (RIPs) . . . 11
    9.3. Finalizing the Configuration . . . 11
10. Testing & Verification . . . 11
    10.1. Using System Overview . . . 12
11. Technical Support . . . 12
12. Further Documentation . . . 12
13. Appendix . . . 13
    13.1. Configuring HA - Adding a Secondary Appliance . . . 13
        13.1.1. Non-Replicated Settings . . . 13
        13.1.2. Configuring the HA Clustered Pair . . . 14
14. Document Revision History . . . 16

# 1. About this Brief

This brief outlines the steps required to configure a load balanced Oracle PeopleSoft environment utilizing Loadbalancer.org appliances. It covers the configuration of the load balancers and also any Oracle PeopleSoft 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 Oracle PeopleSoft. 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. Oracle PeopleSoft

- All versions

# 4. Oracle PeopleSoft

From Oracle, the PeopleSoft Enterprise Suite encompasses a range of applications, which include human capital management (HCM), financial management (FM), and service automation and supplier relationship management (SRM).

PeopleSoft is a product line of applications that are designed to meet the needs of modern businesses. PeopleSoft is part of the Oracle software family and is a comprehensive software solution that brings to the table a wide range of tools and applications for general business use, which include payroll, communication management, and materials.

# 5. Load Balancing Oracle PeopleSoft

> **Note** It's highly recommended that you have a working Oracle PeopleSoft environment first before

implementing the load balancer.

## 5.1. Persistence (aka Server Affinity)

Source IP address-based server affinity is used when load balancing Oracle PeopleSoft. This ensures that a given connection 'sticks' to the same PeopleSoft server for its entire duration.

## 5.2. Virtual Service (VIP) Requirements

To provide load balancing and HA for Oracle PeopleSoft, a single VIP is required:

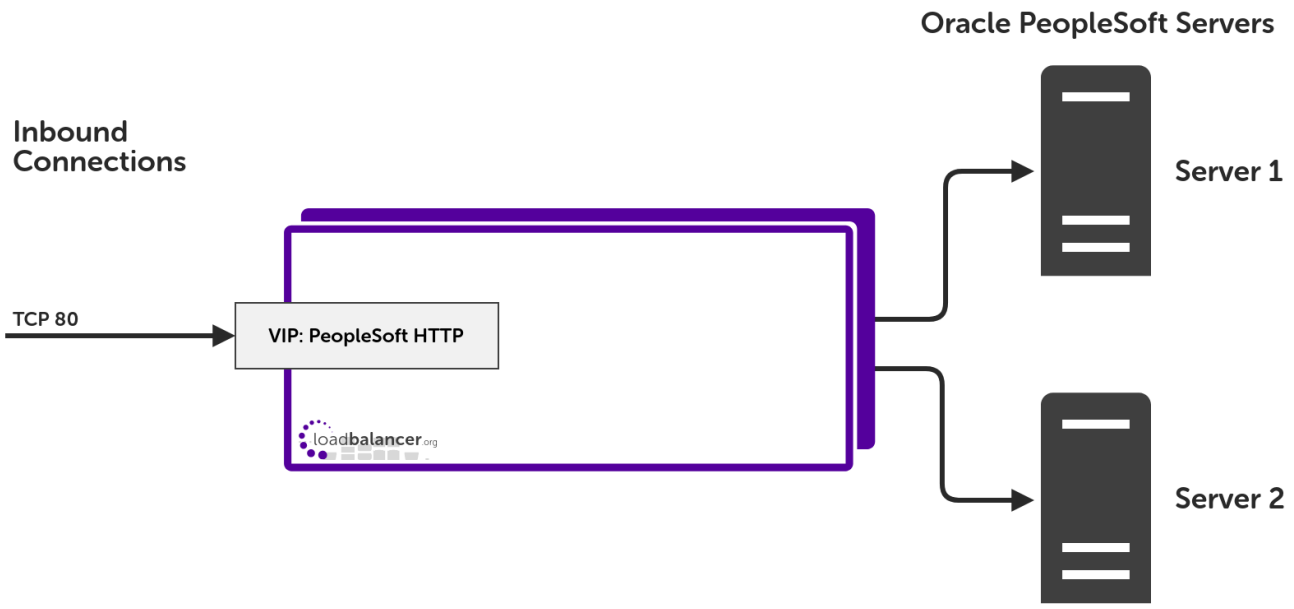
- HTTP

## 5.3. Port Requirements

The following table shows the port and protocols that are load balanced:

| Port | Protocols | Use |
|---|---|---|
| 80 | TCP/HTTP | PeopleSoft HTTP Traffic |

# 6. Deployment Concept




VIP = **V**irtual **IP** Address

> **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

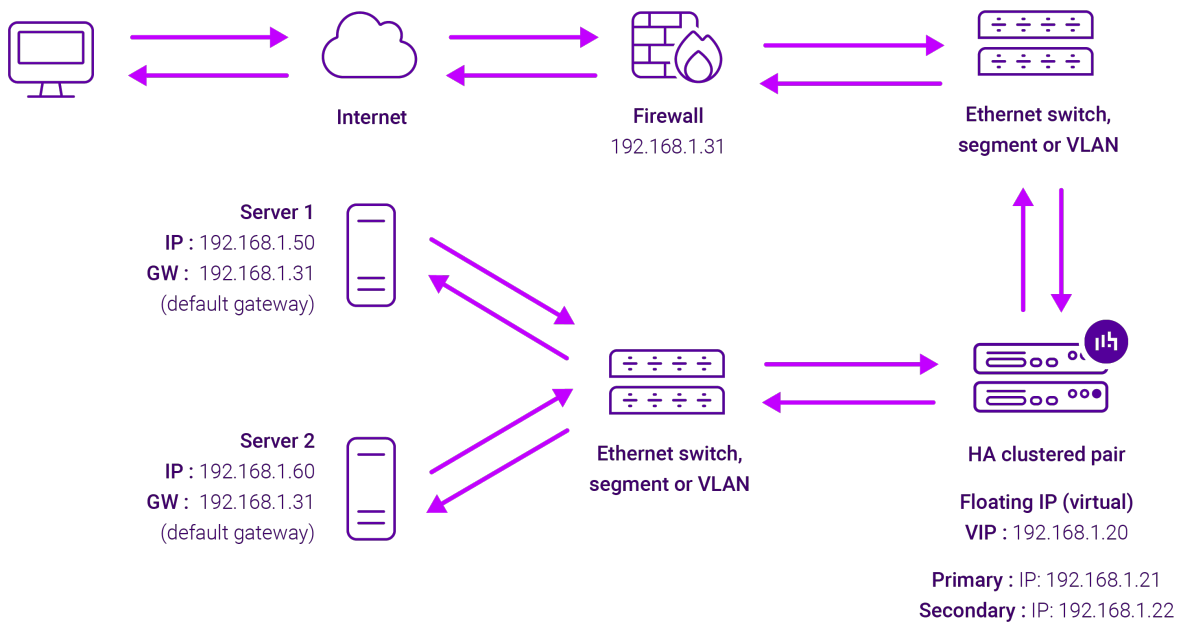
The load balancer can be deployed in 4 fundamental ways: *Layer 4 DR mode*, *Layer 4 NAT mode*, *Layer 4 SNAT*

*mode*, and *Layer 7 SNAT mode*.

For Oracle PeopleSoft, using layer 7 SNAT mode is recommended. This mode is described below and is used for the configurations presented in this guide. For configuring using layer 7 SNAT mode please refer to Section 9, "Appliance Configuration for Oracle PeopleSoft".

## 7.1. 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 corresponding request to the chosen Real Server. As a result, Layer 7 is typically not as fast as the Layer 4 methods. 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. The image below shows an example network diagram for this mode.




- Because layer 7 SNAT mode is a full proxy, Real Servers in the cluster can be on any accessible network 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 one-arm or two-arm configuration. For two-arm deployments, **eth1** is typically used for client side connections and **eth0** is used for Real Server connections, although this is not mandatory since any interface can be used for any purpose.
- Requires no mode-specific configuration changes to the load balanced Real Servers.

- Port translation is possible with Layer 7 SNAT mode, e.g. VIP:80 → RIP:8080 is supported.
- 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.

# 8. Loadbalancer.org Appliance – the Basics

## 8.1. 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.

## 8.2. 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.

## 8.3. 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.

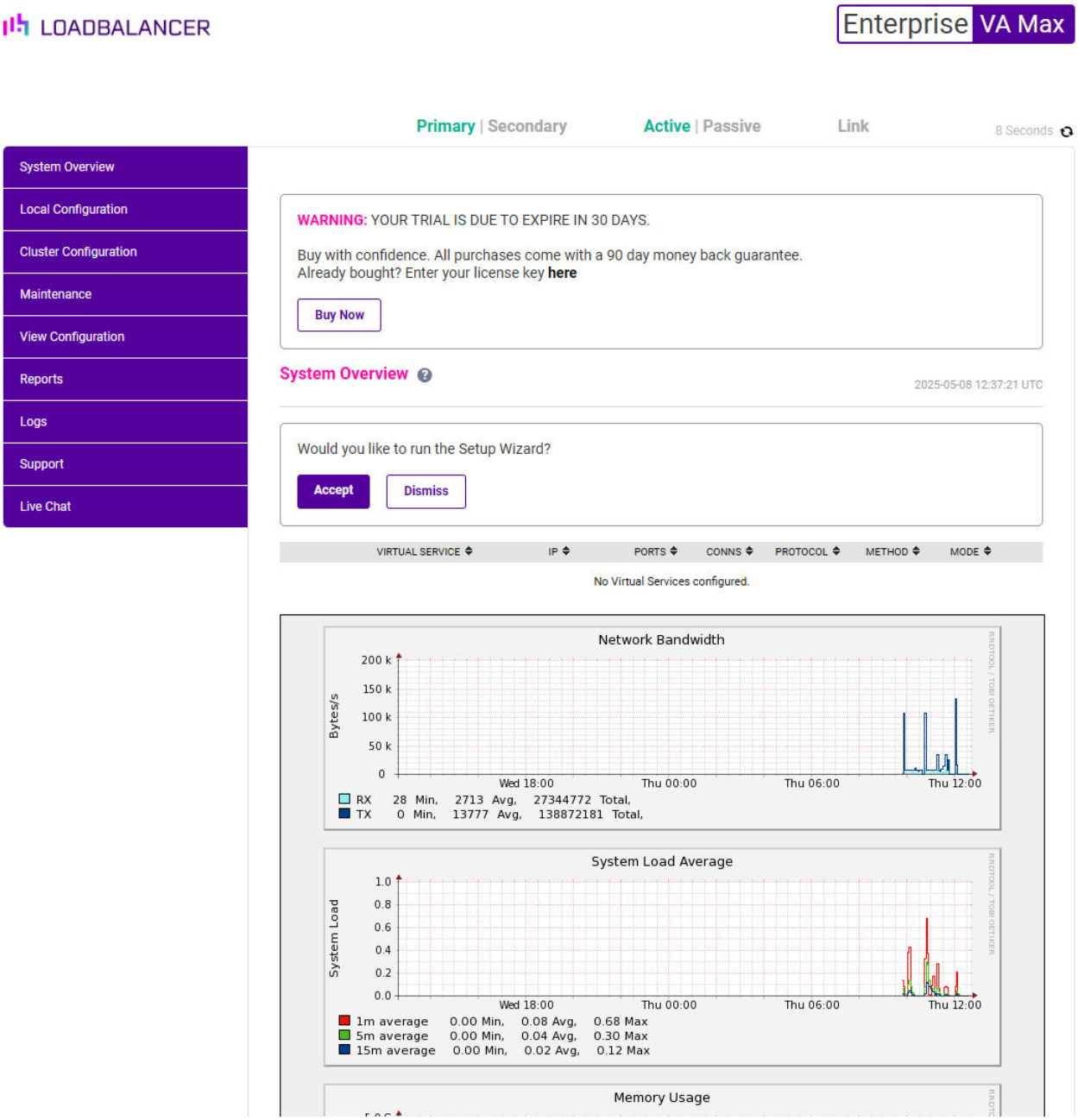
> **Note** If you need to change the port, IP address or protocol that the WebUI listens on, please refer to Service Socket Addresses.

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:



3. 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.

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

### 8.3.1. 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

## 8.4. Appliance Software Update

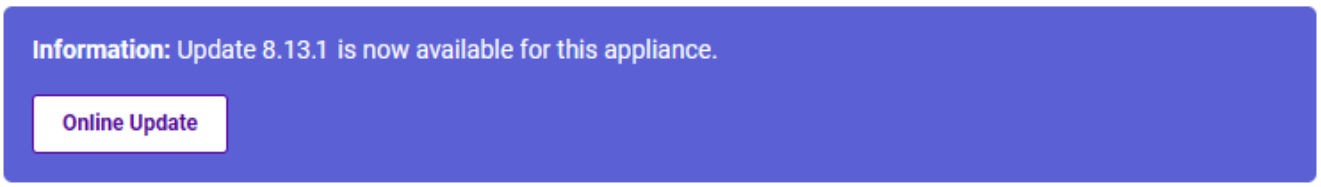
We recommend that the appliance is kept up to date to ensure that you benefit from the latest bug fixes, security updates and feature improvements. Both online and offline update are supported.

> **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.

### 8.4.1. Online Update

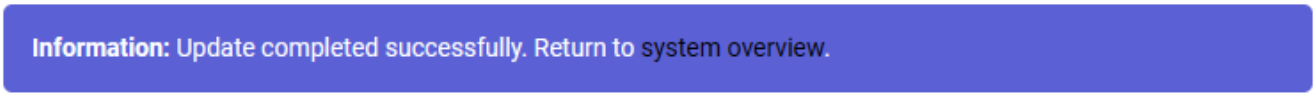
The appliance periodically contacts the Loadbalancer.org update server (**update.loadbalancer.org**) and checks for updates. This is the default behavior and can be disabled if preferred. If an update is found, a notification similar to the example below will be displayed at the top of the WebUI:




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:




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

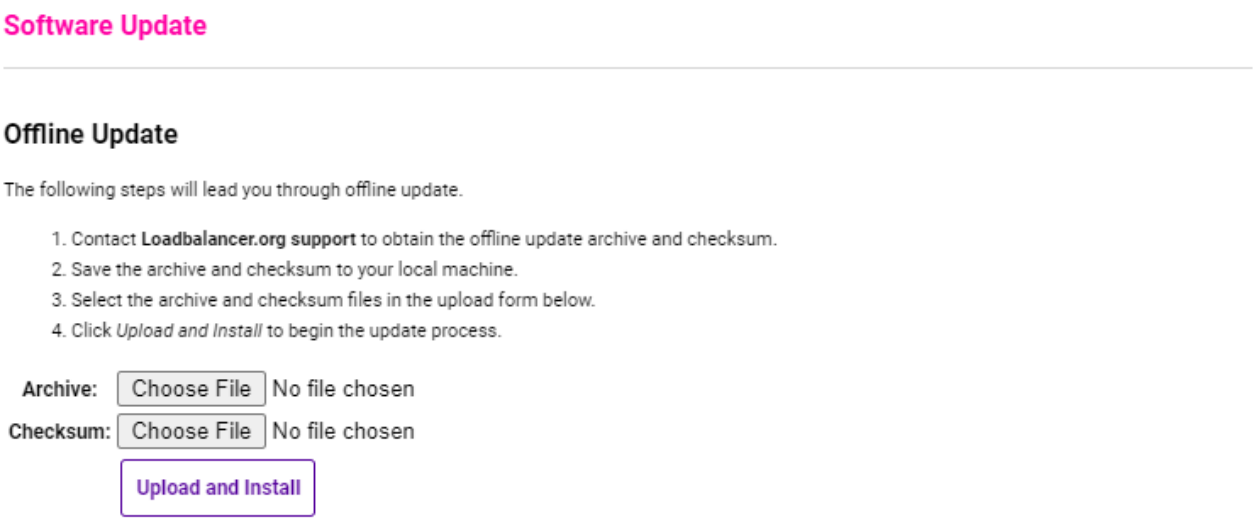
### 8.4.2. Offline Update

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:




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.

## 8.5. 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 |

| Protocol | Port | Purpose |
|---|---|---|
| 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 Addresses.

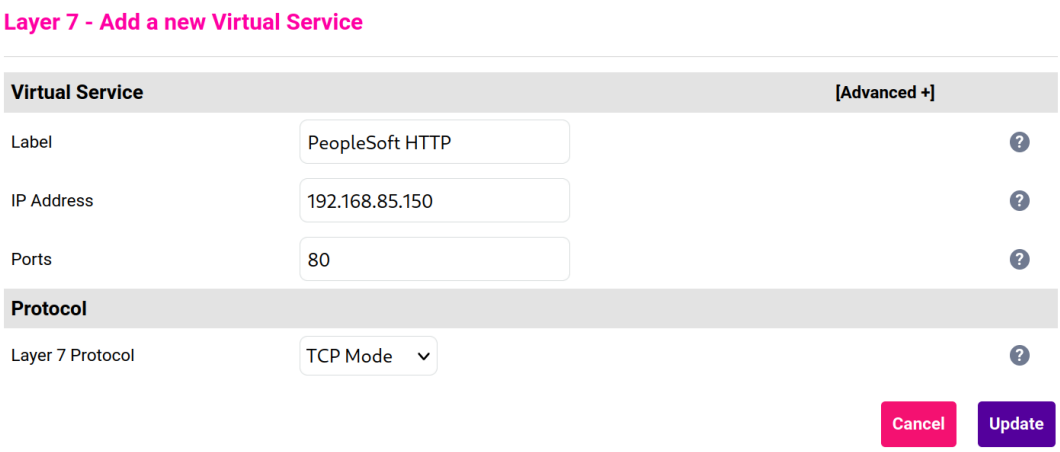
## 8.6. HA Clustered Pair Configuration

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.

# 9. Appliance Configuration for Oracle PeopleSoft

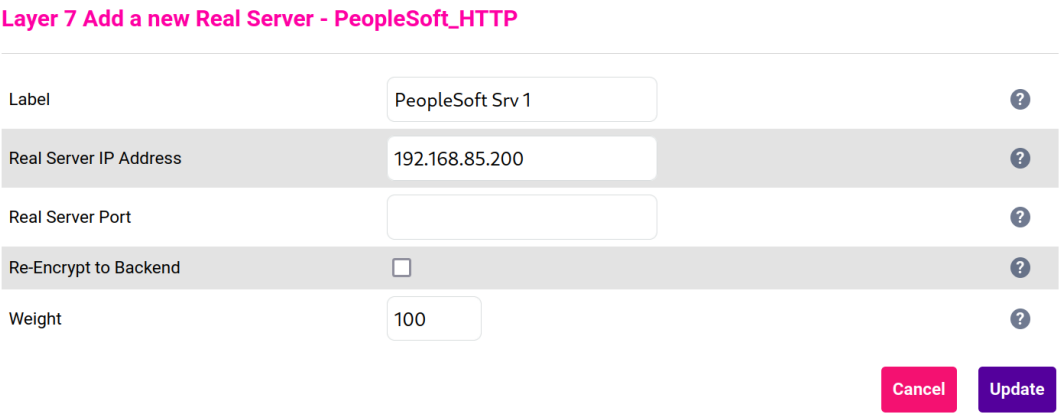
## 9.1. Configuring the Virtual Service (VIP)

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. **PeopleSoft 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.




## 9.2. 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. **PeopleSoft Srv 1**.
3. Set the *Real Server IP Address* field to the required IP address, e.g. **192.168.85.200**.
4. Leave the *Real Server Port* field blank.
5. Click **Update**.
6. Repeat these steps to add additional PeopleSoft servers as required.




## 9.3. Finalizing the Configuration

To apply the new settings, HAProxy must be reloaded. This can be done using the button in the "Commit changes" box at the top of the screen or by using the *Restart Services* menu option:

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

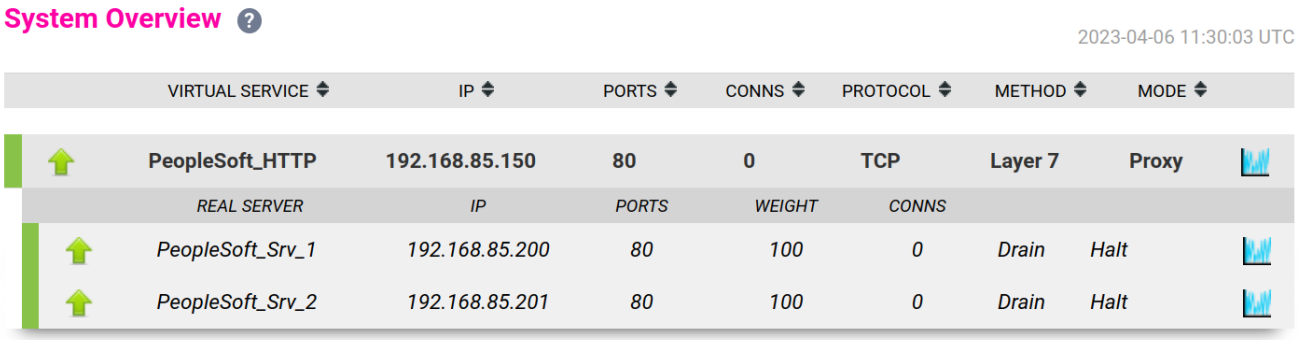
# 10. Testing & Verification

> **Note** For additional guidance on diagnosing and resolving any issues you may have, please also refer

to Diagnostics & Troubleshooting.

## 10.1. Using System Overview

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




# 11. 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.

# 12. Further Documentation

For additional information, please refer to the Administration Manual.

# 13. Appendix

## 13.1. 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.

### 13.1.1. 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:

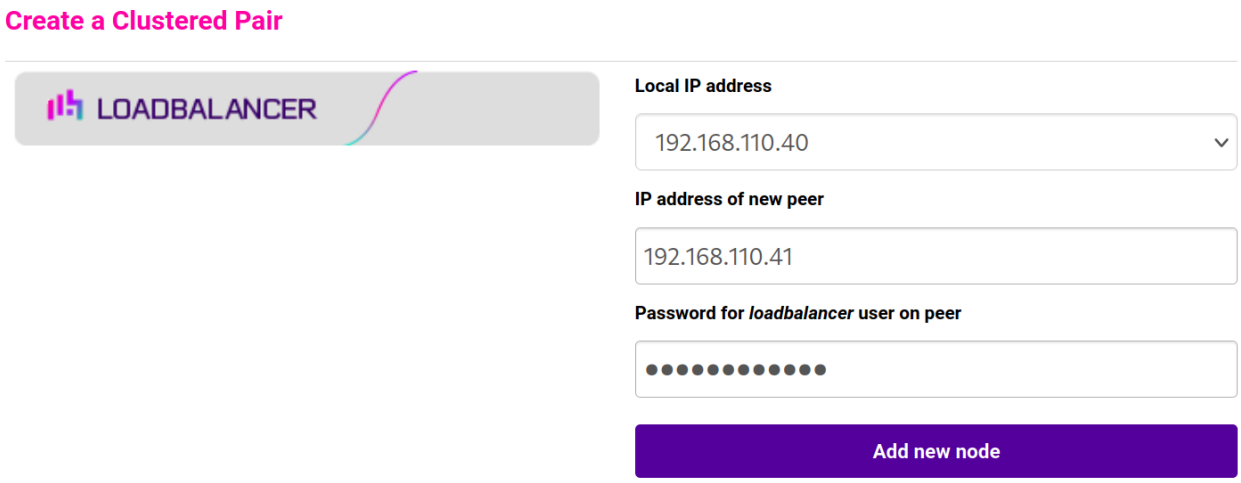
| WebUI Main Menu Option | Sub Menu Option | Description |
|---|---|---|
| Local Configuration | Hostname & DNS | Hostname and DNS settings |
| Local Configuration | Network Interface Configuration | Interface IP addresses, bonding configuration and VLANs |
| Local Configuration | Routing | Default gateways 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.

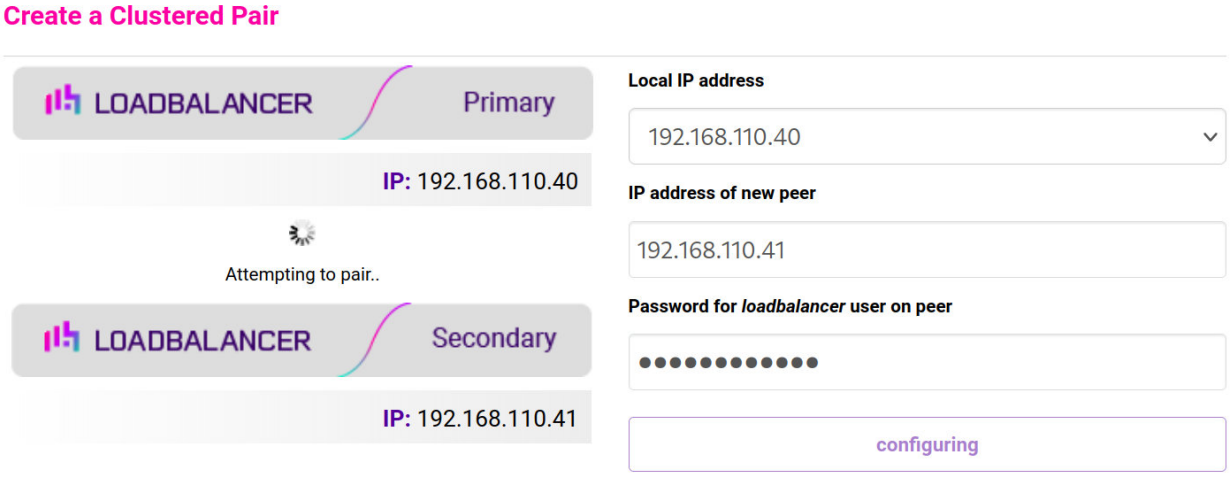
### 13.1.2. Configuring the HA Clustered Pair

> **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.

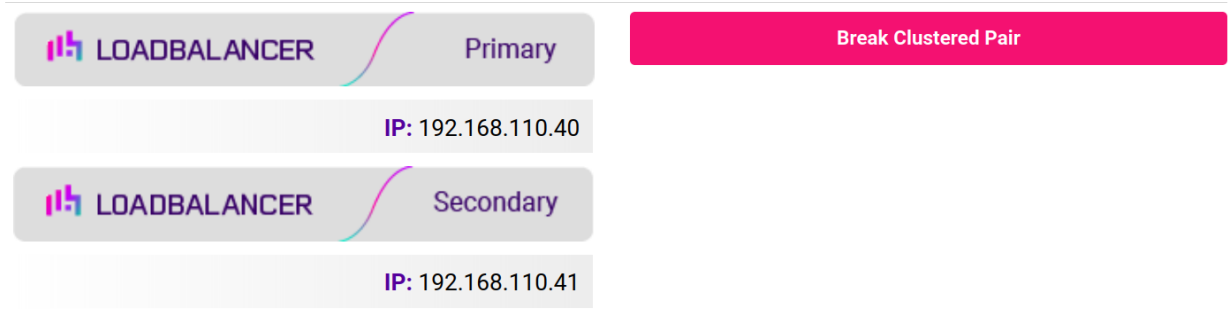
1. Deploy a second appliance that will be the Secondary and configure initial network settings.
2. Using the WebUI on the Primary appliance, navigate to: *Cluster Configuration > High-Availability Configuration*.




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:




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




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. Document Revision History

| Version | Date | Change | Reason for Change | Changed By |
|---|---|---|---|---|
| 1.0.0 | 6 April 2023 | Initial version | | VM, AH |

LOADBALANCER

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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.