LOADBALANCER

QUICK GUIDE

Load Balancing NTP

Version 1.3.0

Table of Contents

1. About this Guide

This guide provides a quick reference for setting up NTP load balancing using Loadbalancer.org appliances.

2. Loadbalancer.org Appliances Supported

All our products can be used for load balancing NTP. For full specifications of available models please refer to https://www.loadbalancer.org/products.

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.

4. Related Documentation

For additional information, please refer to the Administration Manual and the relevant Quick Start / Configuration Guide.

5. Load Balanced Ports / Services

Port	Use	Transport Layer Protocols
123	NTP	TCP & UDP

6. Appliance Configuration Overview

6.1. Operation Mode

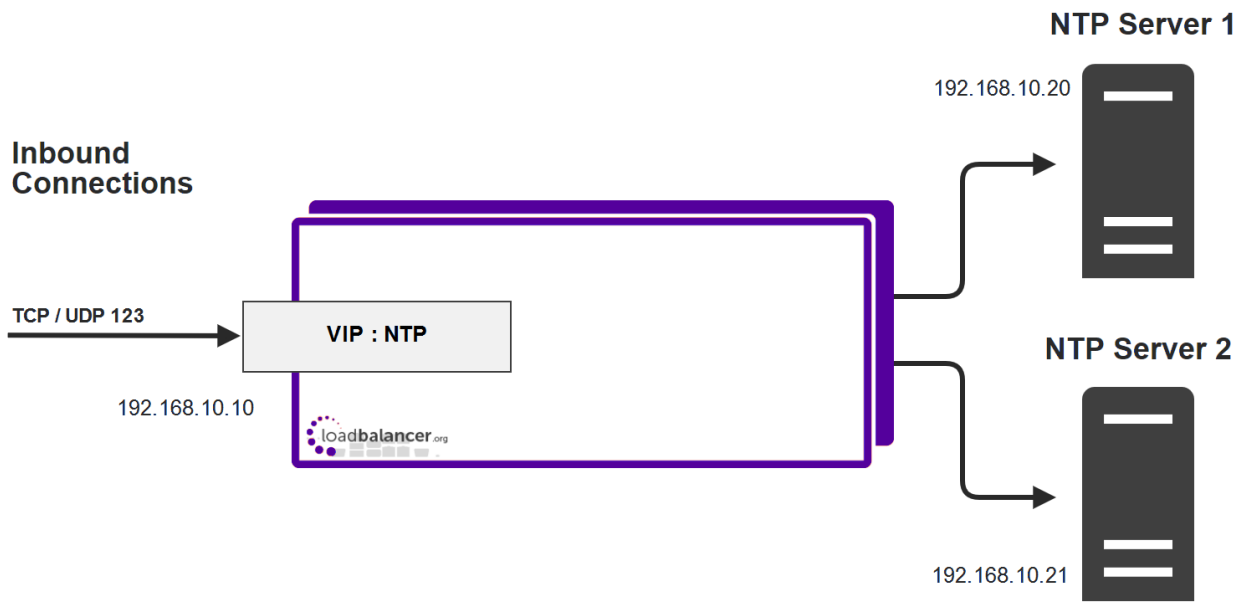
The load balancer is configured using layer 4 SNAT mode. This mode requires no Real Server changes, offers high performance and supports both TCP and UDP.

6.2. NTP Server Health-check

A custom health-check is created which ensures that the NTP servers correctly respond to an actual NTP time request rather than relying on a simple TCP port connect.

6.3. Deployment Concept

Once the load balancer is deployed, clients connect to the Virtual Service (VIP) on the load balancer rather than directly to one of the NTP servers.



7. Deploying & Accessing the Appliance

7.1. Deployment

Deploy the Loadbalancer.org appliance as described in the relevant Quick Start / Configuration Guide.

7.2. 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.

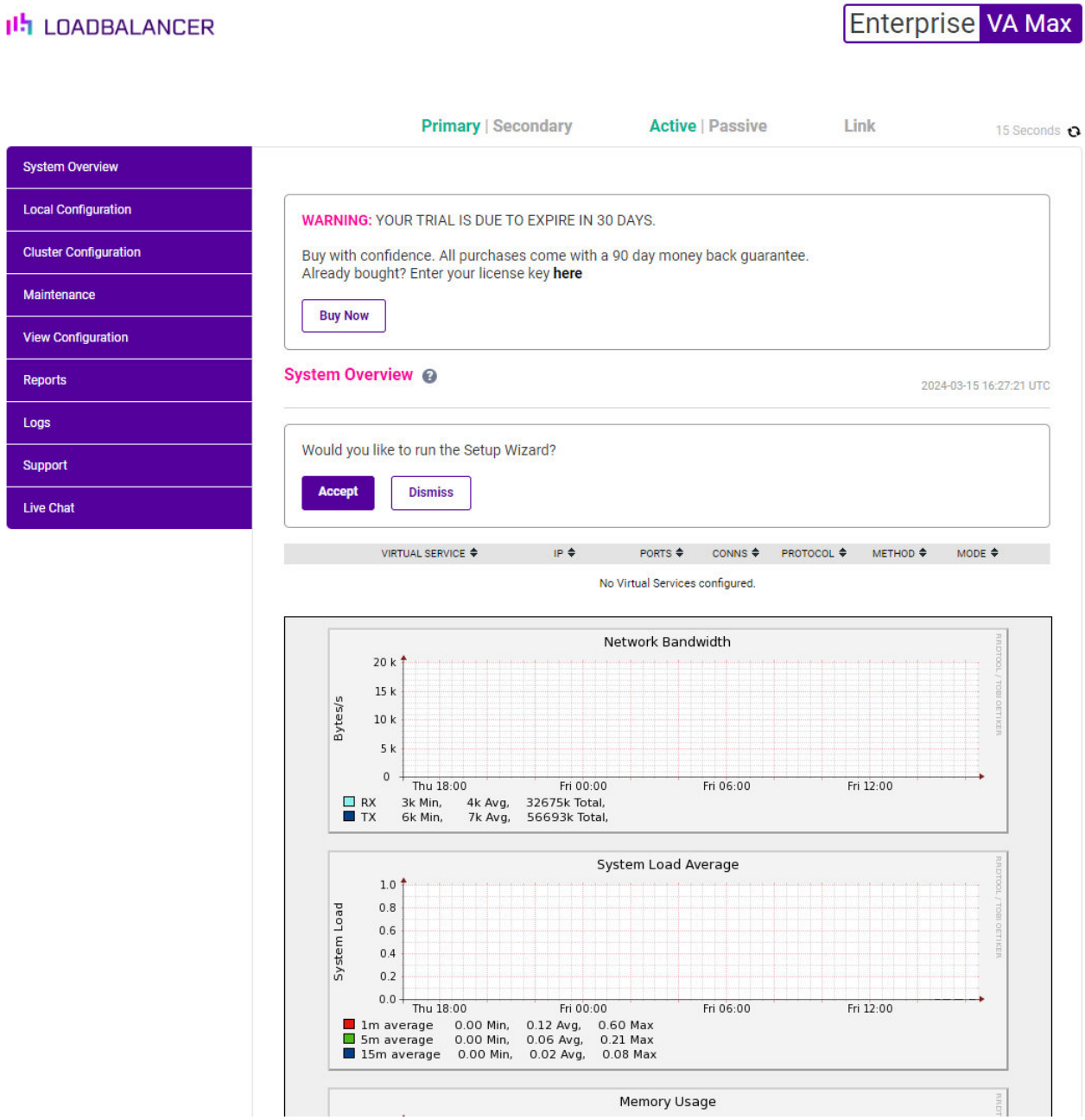
   > **Note** If you need to change the port, IP address or protocol that the WebUI listens on, please refer to Service Socket Addresses.

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 which can be used to configure layer 7 services. Click **Dismiss** if you're following a guide or want to configure the appliance manually or click **Accept** to start the wizard.

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 taking 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. Appliance Configuration

8.1. Create The Custom NTP Health-check

1. Using the WebUI, navigate to *Cluster Configuration > Health Check Scripts* and click **Add New Health Check**.
2. Specify an appropriate *Name* for the health check, e.g. **NTP-Check**.
3. Set *Type* to **Virtual Service**.
4. Set *Template* to any option in the *Virtual Service* section (this will be cleared and edited in the next step so it doesn't matter which one is selected).
5. Select and delete all the text in the editor window (you can use CTRL-A to select all text).
6. Now Copy/paste the following custom health Check script into the editor window:

```
#!/bin/bash

# Declare Path
PATH=/usr/local/sbin:/usr/local/bin:/sbin:/bin:/usr/sbin:/usr/bin:/root/bin:/root/

# Script Variables
CHECK_IP="$3"      # $3 is the variable assigned the real server IP
CHECK_TIMEOUT="2"  # time out value in seconds

# Run ntpdate with -q option (query only) to check that the NTP server
# can provide the time
ntpdate -q -t $CHECK_TIMEOUT $CHECK_IP &>/dev/null
if [ $? -eq 0 ]
then
    exit 0 # success
else
    exit 10 # failure
fi
```

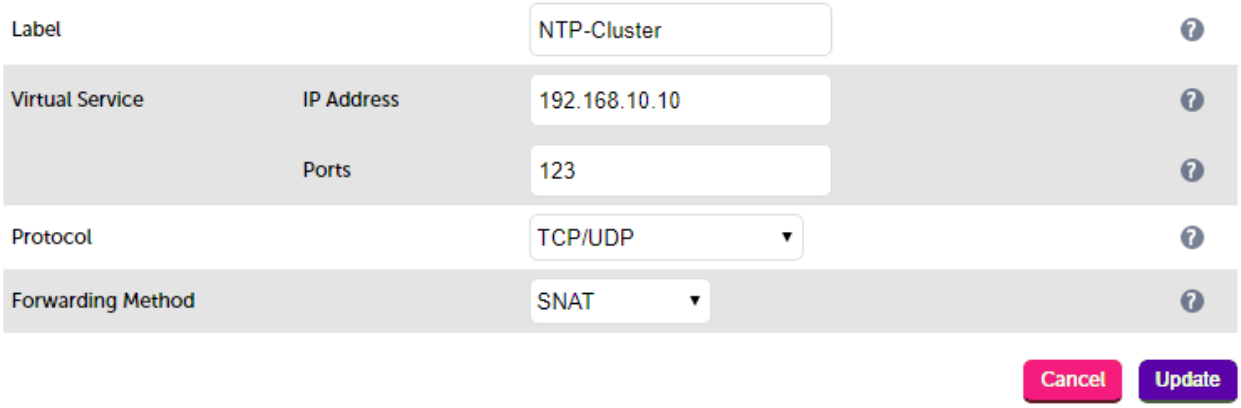
7. Click **Update** to save the new health check script.

> **Note** By default, the health check will run every 5 seconds. If this is too frequent, it can be changed using the WebUI menu option: *Cluster Configuration > Layer 4 – Advanced Configuration* and setting the *Check Interval* to the required value in seconds.

8.2. Configure the Virtual Service (VIP)

Create a new VIP as described below – this is where clients connect to rather than an NTP server directly.

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



3. Enter an appropriate label for the VIP, e.g. **NTP-Cluster**.
4. Set the *Virtual Service IP address* field to the required IP address, e.g. **192.168.10.10**.
5. Set the *Virtual Service Ports* field to **123**.
6. Set the *Protocol* to **TCP/UDP**.
7. Set the *Forwarding Method* to **SNAT**.
8. Click **Update**.
9. Click **Modify** next to the newly created VIP.
10. Change *Check Type* to **External Script**.
11. Set the *External Script* drop-down to **NTP-Check** – this was created above.
12. Click **Update**.

8.3. Define the Real Servers

The Real Servers (i.e. the NTP servers) must now be associated with the VIP.

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	NTP1	
Real Server IP Address	192.168.10.20	
Weight	100	
Minimum Connections	0	
Maximum Connections	0	

Cancel Update

3. Enter an appropriate label for the RIP. e.g. **NTP1**.
4. Change the *Real Server IP Address* field to the required address, e.g. **192.168.10.20**.
5. Leave the other settings at their default values.
6. Click **Update**.
7. Repeat the above steps to add your other NTP server(s).

9. Testing & Verification

9.1. Check Server State

Using the System Overview in the WebUI, verify that the VIP and associated RIPs are up (green) as shown in the example below:

SYSTEM OVERVIEW 2017-03-10 10:56:24 UTC

VIRTUAL SERVICE	IP	PORTS	CONNS	PROTOCOL	METHOD	MODE
NTP-Cluster	192.168.10.10	N\A	0	TCP/UDP	Layer 4	SNAT
REAL SERVER	*IP*	*PORTS*	*WEIGHT*	*CONNS*		
NTP1	*192.168.10.20*	*N\A*	*100*	*0*	*Drain*	*Halt*
NTP2	*192.168.10.21*	*N\A*	*100*	*0*	*Drain*	*Halt*

9.2. Check Connectivity

Now test the load balancer by connecting clients to the VIP address (192.168.10.10 in this example configuration) rather than connecting directly to an NTP server.

10. Loadbalancer.org Technical Support

If you have any questions regarding the appliance or would like assistance designing your deployment, please don't hesitate to contact our support team: support@loadbalancer.org.

11. Document Revision History

Version	Date	Change	Reason for Change	Changed By
1.1.0	4 November 2019	Styling and layout	General styling updates	AH
1.1.1	28 August 2020	New title page Updated Canadian contact details Added explanatory note that remote access is now disabled by default	Branding update Change to Canadian contact details Remote access functionality removed from the product by default	AH
1.1.2	17 June 2021	Added required space in the health check script and updated script comments	Script would not run	RJC
1.1.3	25 May 2022	Updated health check script	Functionality improvements	RJC
1.2.0	1 September 2022	Converted the document to AsciiDoc Updated links and instructions where necessary	Move to new documentation system Required updates	AH
1.2.1	5 January 2023	Added one level of section numbering	Housekeeping across all documentation	AH
1.2.2	2 February 2023	Updated screenshots	Branding update	AH
1.2.3	8 March 2023	Improved document structure	Document standardization	RJC
1.3.0	24 March 2023	New document theme Modified diagram colours	Branding update	AH

Visit us: www.loadbalancer.org

Phone us: +44 (0)330 380 1064

Phone us: +1 833 274 2566

Email us: info@loadbalancer.org

Follow us: @loadbalancer.org

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.