Load Balancing NTP

Version 1.3.0
Table of Contents

1. About this Guide ......................................................... 3
2. Loadbalancer.org Appliances Supported ........................................ 3
3. Software Versions Supported ........................................ 3
   3.1. Loadbalancer.org Appliance ........................................ 3
4. Related Documentation ........................................ 3
5. Load Balanced Ports / Services ........................................ 3
6. Appliance Configuration Overview ........................................ 3
   6.1. Operation Mode ..................................................... 3
   6.2. NTP Server Health-check ........................................ 3
   6.3. Deployment Concept ................................................ 3
7. Deploying & Accessing the Appliance ...................................... 4
   7.1. Deployment .......................................................... 4
   7.2. Accessing the WebUI ............................................... 4
      Main Menu Options .................................................. 6
8. Appliance Configuration .................................................. 6
   8.1. Create The Custom NTP Health-check .................................. 6
   8.2. Configure the Virtual Service (VIP) .................................. 7
   8.3. Define the Real Servers ............................................ 7
9. Testing & Verification .................................................... 8
   9.1. Check Server State .................................................. 8
   9.2. Check Connectivity ................................................ 8
10. Loadbalancer.org Technical Support .......................................... 8
11. Document Revision History ........................................... 9
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 supported in all cloud platforms due to platform specific limitations, please check with Loadbalancer.org support for further details.

3. Software Versions Supported
3.1. Loadbalancer.org Appliance
- v8.3.8 and later

Note
The screenshots used throughout this document aim to track the latest Loadbalancer.org software version. If using an older software version, note that the screenshots presented here may not match the 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

<table>
<thead>
<tr>
<th>Port</th>
<th>Use</th>
<th>Transport Layer Protocols</th>
</tr>
</thead>
<tbody>
<tr>
<td>123</td>
<td>NTP</td>
<td>TCP &amp; UDP</td>
</tr>
</tbody>
</table>

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 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.

There are certain differences when accessing the WebUI for the cloud appliances. For details, please refer to the relevant Quick Start / Configuration Guide.

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

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


You’ll receive a warning about the WebUI’s 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.
2. Log in to the WebUI using the following credentials:

   **Username**: loadbalancer  
   **Password**: <configured-during-network-setup-wizard>

   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.
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:

![Virtual Service Configuration](image)

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:
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:

### 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

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