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

Related Documentation
For additional information about the Loadbalancer.org appliance, please also refer to the following documents:

- Quick Start Guide
- Administration Manual

Load Balanced Ports

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

Load Balancer Configuration

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

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.

Configuration Diagram
The following diagram shows that clients connect to the Virtual Service (VIP) on the load balancer rather than directly to one of the NTP servers.
Deploy The Loadbalancer.org Appliance
Deploy the Loadbalancer.org appliance as detailed in the Quick Start Guide.

Accessing The Appliance WebUI
Using a browser, navigate to the appliance's IP address on HTTPS port 9443, i.e.
https://<IP-Address>:9443

Note: For HTTPS connections you'll receive a warning about the certificate as it's a self signed cert not related to an Internet based CA.

Use the following default credentials to login:

Username: loadbalancer
Password: loadbalancer

Note: To change the password for the 'loadbalancer' account, use the WebUI option: Maintenance > Passwords.

Once logged in, the WebUI is displayed:
Configuration Steps

Step 1 – Create The Custom External 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 Check Interval to the required value in seconds.

Step 2 – Create 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 in Step 1 above.
12. Click **Update**.

**Step 3 – Define The Real Servers (RIPs)**

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).

**Testing & Verification**

**Check Server State**

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

![System Overview Example]

**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.

**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.
### Document Revision History

<table>
<thead>
<tr>
<th>Version</th>
<th>Date</th>
<th>Change</th>
<th>Reason for Change</th>
<th>Changed By</th>
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<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>
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<tr>
<td>1.1.1</td>
<td>28 August 2020</td>
<td>New title page</td>
<td>Branding update</td>
<td>AH</td>
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<td></td>
<td></td>
<td>Updated Canadian contact details</td>
<td>Change to Canadian contact details</td>
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<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>
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<tr>
<td>1.1.2</td>
<td>17th 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>
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<tr>
<td>1.1.3</td>
<td>25th May 2022</td>
<td>Updated health check script</td>
<td>Functionality improvements</td>
<td>RJC</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.