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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>
</tr>
</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 – a requirement for load balancing NTP servers.

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 an editor, create a file named NTP-check.sh in /var/lib/loadbalancer.org/check/

   Note: This can be done using an editor on the appliance such as vim or vi if you're familiar with Linux, or by using the editor included with WinSCP. WinSCP is a free Windows utility that enables files in a Linux filesystem to be easily created, viewed and modified from a Windows PC/server. It's available here: http://winscp.net/eng/download.php

2. Copy/paste the following into the file:

   ```bash
   #!/bin/bash
   # NTP Server Health Check
   
   #Script Variables for Real Server IP & Port
   CHECK_IP="$3" # $3 is variable assigned an IP
   CHECK_TIMEOUT="5"# time out value
   
   ## run ntpdate
   ntpdate -q -t $CHECK_TIMEOUT $CHECK_IP
   if [ $? -eq 0 ]
   then
     exit 0
   else
     exit 10
   fi
   ```

3. Save the file

4. Set the file permissions of NTP-check.sh to 755. In WinSCP, right click the file, click properties and set the permissions as shown below:

   ![Permission Settings](image)

   (this newly created health-check script will be used in Step 2 below when configuring the VIP)

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.sh** – 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:

   ![Real Server Configuration](image)

   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](image)

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>
</tr>
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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.