Load Balancing
FreePBX/Asterisk in AWS
Version 1.3.0
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1. About this Guide

This document provides a quick reference guide on how to load balance FreePBX/Asterisk servers using the Enterprise AWS Loadbalancer.org Amazon cloud appliance.

2. Software Versions Supported

2.1. Loadbalancer.org Appliance

- v8.7.0 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.

2.2. FreePBX

- All versions

3. Related Documentation

For additional information, please refer to the Administration Manual and the AWS Quickstart Configuration Guide.

4. Load Balanced Ports / Services

<table>
<thead>
<tr>
<th>Ports</th>
<th>Use</th>
<th>Transport Layer Protocol</th>
</tr>
</thead>
<tbody>
<tr>
<td>5060</td>
<td>Non-encrypted Session Initiation Protocol (SIP)</td>
<td>UDP &amp; TCP</td>
</tr>
<tr>
<td>5061</td>
<td>Encrypted Session Initiation Protocol (SIP)</td>
<td>UDP &amp; TCP</td>
</tr>
<tr>
<td>4569</td>
<td>Inter Asterisk eXchange (IAX)</td>
<td>UDP</td>
</tr>
<tr>
<td>10000–20000</td>
<td>Real Time Transport Protocol (RTP)</td>
<td>UDP</td>
</tr>
<tr>
<td>10000–20000</td>
<td>Real Time Transport Control Protocol (RTCP)</td>
<td>UDP</td>
</tr>
</tbody>
</table>

5. VPC Security Group inbound rules

The following inbound rules must be configured in your Security Group:

- For management: TCP 9443 (Appliance WebUI)
- For VoIP services: UDP 5060 & 5061 (SIP), UDP 10000-20000 (RTP & RTCP) and UDP 4569 (IAX)
6. Appliance Configuration Overview

6.1. Operation Mode
The load balancer is configured using layer 4 NAT mode. For NAT mode to operate correctly, routing rules for the Real (FreePBX) Server subnet must be changed so that return traffic passes back via the load balancer.

6.2. FreePBX Server Health-check
A connect to port health-check is used to verify that each FreePBX Server is available.

7. Deploying & Accessing the Appliance

7.1. Deployment
Deploy the Loadbalancer.org appliance as described in the AWS Quickstart Configuration Guide.

7.2. Accessing the Appliance WebUI
Using a browser, navigate to the public IP address or public DNS name on port 9443:

https://<Public IP address>:9443

or

https://<Public DNS name>:9443

Note: 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.

Log in to the WebUI using the following default credentials:

Username: loadbalancer
Password: <EC2 Instance-ID>

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

Once logged in, the WebUI is displayed:
WebUI 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

**EC2 Configuration** - Configure AWS specific settings

**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. Configuration Steps

8.1. Appliance Configuration

Configure the Virtual Service

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

<table>
<thead>
<tr>
<th>Virtual Service</th>
<th></th>
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<tbody>
<tr>
<td>Label</td>
<td>FreePBX</td>
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<tr>
<td>IP Address</td>
<td>10.0.1.100</td>
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<tr>
<td>Ports</td>
<td>5060,5061,4569,10000-20000</td>
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<tr>
<td>Protocol</td>
<td>TCP/UDP</td>
</tr>
<tr>
<td>Forwarding Method</td>
<td>NAT</td>
</tr>
</tbody>
</table>

3. Define the required Label (name) for the VIP, e.g. FreePBX.
4. Set the Virtual Service IP Address field to an appropriate value, e.g. 10.0.1.100.
5. Set the Virtual Service Ports field to 5060,5061,4569,10000-20000.
6. Change Protocol to TCP/UDP.
7. Change the Forwarding Method to NAT.
8. Click Update.

Define the Real (Free-PBX) Servers

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 Real Server, e.g. PBX1.
4. Change the Real Server IP Address field to the required address, e.g. 192.168.1.110.
5. Leave the Real Server Port field blank.
6. Click Update.
7. Repeat the above steps to add your other FreePBX server(s).

8.2. AWS Configuration

Associate the VIP with an Elastic IP Address
1. Using the EC2 Management Console, allocate a new Elastic IP address.
2. Now associate this address with the VIP, in this case 10.0.1.100.

Configure Routing Rules
Add a default route to the FreePBX subnet’s routing table, set the target to be the load balancer instance:

- Under the VPC Management Console, select **Route Tables**.
- Select the route table that relates to the private subnet.
- Select the Routes tab, and click **Edit routes**.
- Click **Add Route**.
- set the destination to **0.0.0.0/0**.
- In the Target drop-down select **Instance**, then select the load balancer.
- Click **Save Changes**.

Configure the Source/Dest. Check
Disable the Source/Destination Check for the load balancer instance.

8.3. Free-PBX Server Configuration
Configure the External IP address
Using the PBX GUI, navigate to: *Settings > Asterisk SIP Settings* and set the *External Address* to the EIP associated with VIP.

Configuring Users
When configuring extensions, ensure that NAT is set to Yes.

9. Testing
You should now be able to configure your soft client to register against the PBX EIP sip:extn@EIP and make calls across extensions.

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

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<td>1.2.0</td>
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<td>Updated links and instructions where necessary</td>
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<td>Housekeeping across all documentation</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.