



Load Balancing SIP

Version 1.6.0

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1. About this Guide

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

2. Related Documentation

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

- [Quick Start Guide](#)
- [Administration Manual](#)

3. Load Balanced Ports

Port	Use	Transport Layer Protocols
5060	Non-encrypted SIP	UDP & TCP
5061	Encrypted SIP	UDP & TCP

Note | The exact port requirements depend on how the VoIP system is configured. This guide includes both TCP & UDP ports 5060 and 5061 for completeness.

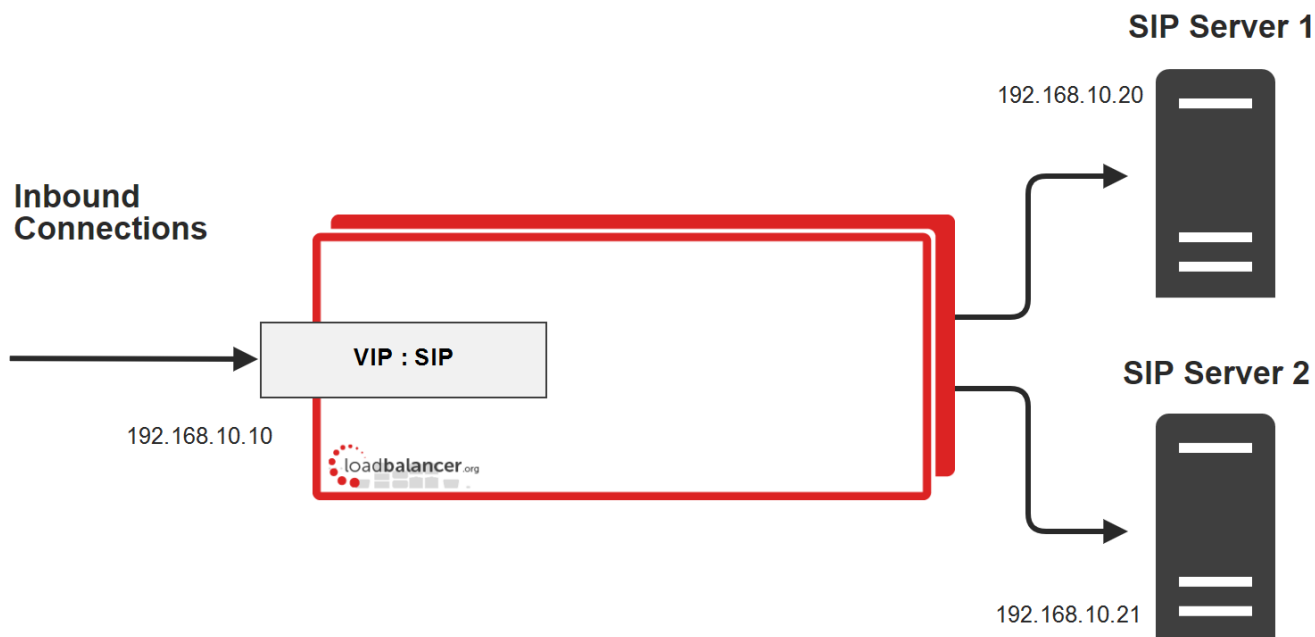
4. Load Balancer Configuration

Operation Mode

The load balancer is configured in single-arm layer 4 DR (Direct Return) mode. This mode offers very high performance since return traffic passes directly from the SIP Servers back to the clients by-passing the load balancer. DR mode works by changing the MAC address on the fly to match the relevant SIP Server.

Since packets will still have the IP address of the VIP, the SIP Servers must be configured to accept this traffic, but must also be configured to not reply to ARP requests for this address. For more details, please refer to section [Step 3 – Solve The ARP Problem](#).

Deployment concept



Deploy the Loadbalancer.org Appliance

Deploy the Loadbalancer.org appliance as detailed in the [Quick Start Guide](#).

Accessing the WebUI

The WebUI is accessed using a web browser. By default, user authentication is based on local Apache .htaccess files. User administration tasks such as adding users and changing passwords can be performed using the WebUI menu option: *Maintenance > Passwords*.

Note

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

Note

If required, users can also be authenticated against LDAP, LDAPS, Active Directory or Radius. For more information please refer to [External Authentication](#).

1. Using a browser, access the WebUI using the following URL:

`https://<IP-address-configured-during-network-setup-wizard>:9443/lbadmin/`

2. Log in to the WebUI:

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:

- System Overview
- Local Configuration
- Cluster Configuration
- Maintenance
- View Configuration
- Reports
- Logs
- Support
- Live Chat

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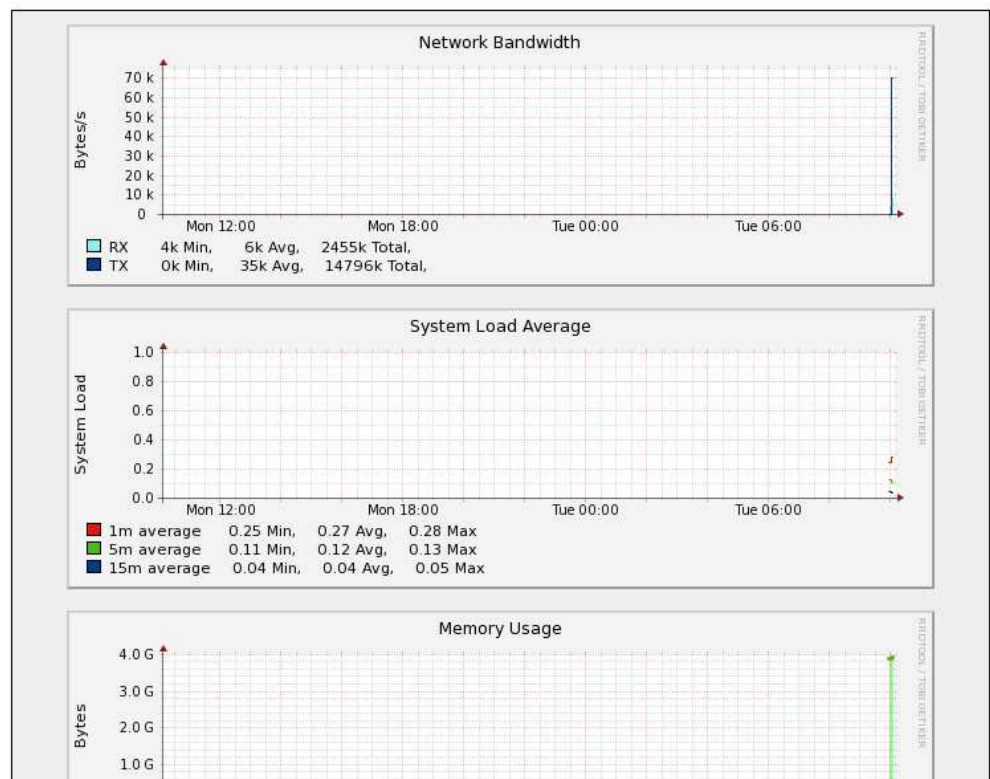
System Overview

2022-06-14 10:07:30 UTC

Would you like to run the Setup Wizard?

VIRTUAL SERVICE IP PORTS CONNS PROTOCOL METHOD MODE

No Virtual Services configured.



Note

The WebUI for the VA is shown, the hardware and cloud appliances are very similar. The yellow licensing related message is platform & model dependent.

3. You'll be asked if you want to run the Setup Wizard. If you click **Accept** the Layer 7 Virtual Service configuration wizard will start. If you want to configure the appliance manually, simple click **Dismiss**.

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

5. Configuration Steps

Step 1 – Create the Virtual Service (VIP)

Follow the steps below to create a new VIP – this is the IP address that clients will connect to.

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		
Label	<input type="text" value="SIP"/>	?
IP Address	<input type="text" value="192.168.10.10"/>	?
Ports	<input type="text" value="5060,5061"/>	?
Protocol		
Protocol	<input type="text" value="TCP/UDP"/>	?
Forwarding		
Forwarding Method	<input type="text" value="Direct Routing"/>	?

3. Specify an appropriate *Label* (name) for the Virtual Service, e.g. **SIP**.
4. Set the *Virtual Service IP Address* to the required IP address, e.g. **192.168.10.10**.
5. Set the *Ports* field as required, e.g **5060,5061** for all SIP ports.

Note

If you only require a single port, e.g. 5060, then just specify **5060** rather than **5060,5061** in the *Ports* field.

6. Set the *Protocol* to **TCP/UDP**.
7. Set the *Forwarding Method* to **Direct Routing**.
8. Click **Update** to create the Virtual Service.

Step 2 – Define The Real Servers (RIPs)

The Real Servers (i.e. the SIP 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	<input type="text" value="SP1"/>	
Real Server IP Address	<input type="text" value="192.168.10.20"/>	
Weight	<input type="text" value="100"/>	
Minimum Connections	<input type="text" value="0"/>	
Maximum Connections	<input type="text" value="0"/>	

3. Enter an appropriate label for the RIP. e.g. **SIP1**.
4. Change the *Real Server IP Address* field to the required address, e.g. **192.168.10.20**.
5. Click **Update**.
6. Repeat the above steps to add your other SIP server(s).

Step 3 – Solve The ARP Problem

As mentioned previously, DR mode works by changing the MAC address of the inbound packets to match the Real Server selected by the load balancing algorithm. To enable DR mode to operate:

- Each Real Server must be configured to accept packets destined for both the VIP address and the Real Servers IP address (RIP). This is because in DR mode the destination address of load balanced packets is the VIP address, whilst for other traffic such as health-checks, administration traffic etc. it's the Real Server's own IP address (the RIP). The service/process (e.g. IIS) must also respond to both addresses.
- Each Real Server must be configured so that it does not respond to ARP requests for the VIP address – only the load balancer should do this.

Configuring the Real Servers in this way is referred to as "*Solving the ARP problem*". The exact steps required depend on the particular OS being used. For full details, please refer to the [Administration Manual](#) and search for "*Solving the ARP Problem*".

6. Testing & Verification

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

2022-07-08 08:30:26 UTC

	VIRTUAL SERVICE	IP	PORTS	CONNS	PROTOCOL	METHOD	MODE	
	SIP	192.168.10.10	5060,5061	0	TCPUDP	Layer 4	DR	
	<i>REAL SERVER</i>	<i>IP</i>	<i>PORTS</i>	<i>WEIGHT</i>	<i>CONNS</i>			
	SIP1	192.168.10.20	5060,5061	100	0	Drain	Halt	
	SIP2	192.168.10.21	5060,5061	100	0	Drain	Halt	

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 users directly to the SIP servers.

7. Related Quick Reference Guides

The following guide may also be useful:

- [Load Balancing Asterix in AWS](#)

8. 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.

9. Document Revision History

Version	Date	Change	Reason for Change	Changed By
1.5.0	5 November 2019	Styling and layout	General styling updates	AH
1.5.1	3 June 2020	New title page Updated Canadian contact details Updated 'Quick Start Guide' hyperlink URL	Branding update Change to Canadian contact details Quick Start Guides have been amalgamated at a new location	AH
1.5.2	8 July 2022	Changed the VIP configuration to use TCP/UDP rather than defining a Firewall Mark.	Simpler configuration steps utilizing updated appliance features.	RJC
1.6.0	1 September 2022	Converted the document to AsciiDoc Updated links and instructions where necessary	Move to new documentation system Required updates	AH

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.



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