Progress®
Kemp® LoadMaster®

Installation Guide LoadMaster for Open Telekom Cloud

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1

Introduction

Open Telekom Cloud (OTC) is an international, large-scale, public OpenStack Powered Platform from Deutsche Telekom supported and operated by T-Systems out of Europe. It has been designed for simplicity, security, compliance, affordability, and openness.

OTC customers can now use the LoadMaster for enhanced load balancing that offers additional security features and advanced load balancing capabilities in an easily-managed solution. Compared to Elastic Load Balancing on OTC, the LoadMaster makes it easy to provide the best performance and security for your applications and simplifies operation with management using a web interface or using an Application Programming Interface (API).

The LoadMaster feature highlights are as follows:

- Web Application Firewall (WAF) to protect applications against attack
- Pre-authentication and Single Sign-On (SSO) of users
- Advanced health checking for better detection of server outages
- Content rules for intelligent traffic management and control
- Advanced session persistence and load balancing options including cookies
- Support for multiple digital certificates and Server Name Indication (SNI)
- Pre-defined application templates for quick setup
- Manage using a web interface or using an API

LoadMaster is an OTC-approved solution that delivers security, resilience and application availability to over 10,000 customers worldwide.

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Prerequisites

The following prerequisites must be configured before attempting the steps in this document:

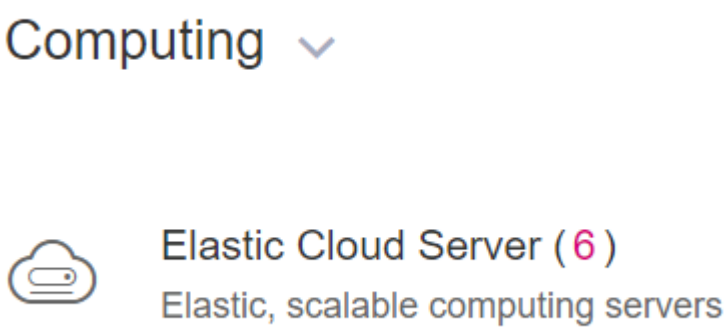
- You must have an OTC account.
- The LoadMaster private image must be uploaded to the OTC workspace.
- You must have access to the relevant Virtual Private Clouds (VPCs) and subnets.
- A security group must be configured specifying the relevant ports and protocols. We recommend having:
  - TCP rules for ports 8443, 6973 (for High Availability (HA) synchronization), and 8444
  - A UDP rule for port 53 (for DNS)
  - An SSH rule for port 22 (not essential unless it is a GEO LoadMaster or you are using Kemp 360 Central)
- An External IP address (EIP) must be configured.
- For a single LoadMaster with a Public IP address (PIP), if you want more than one Virtual Service IP address then you need multiple PIPs. You cannot bind PIPs to Virtual Services (only Network Interface Cards (NICs)) so the LoadMaster needs multiple NICs.
- For High Availability (HA) LoadMasters with an Enhanced Load Balancer (ELB), the ELB must be configured to allow NAT from public or multiple PIPs to each Virtual Service.

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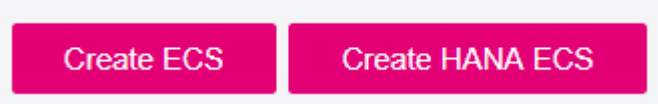
Deploy a LoadMaster in the Open Telekom Cloud Platform

To deploy a LoadMaster in the Open Telekom Cloud platform, follow the steps below:

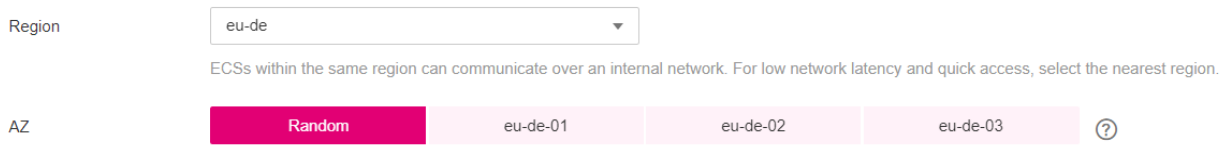
1. Log in to the relevant Open Telekom Cloud workspace.



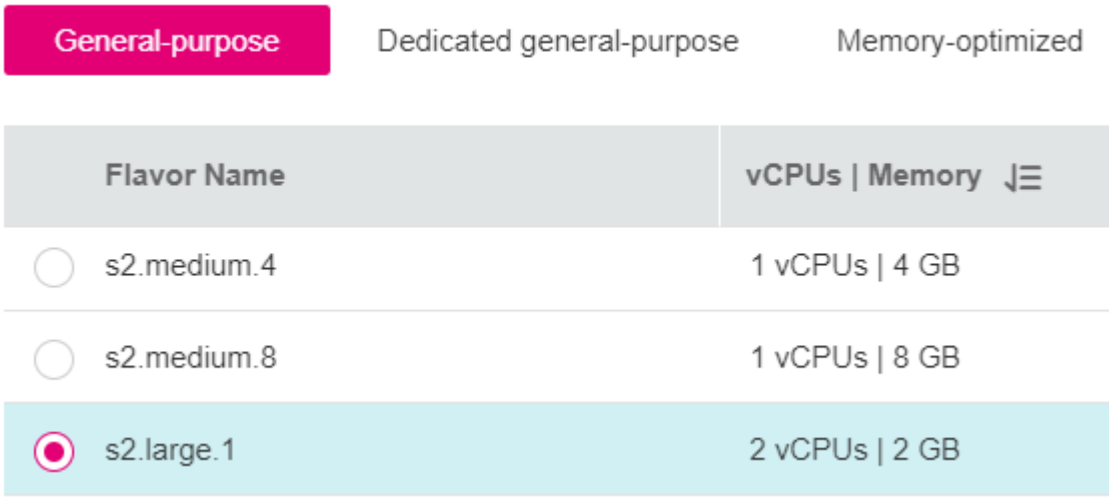
2. Click **Elastic Cloud Server**.



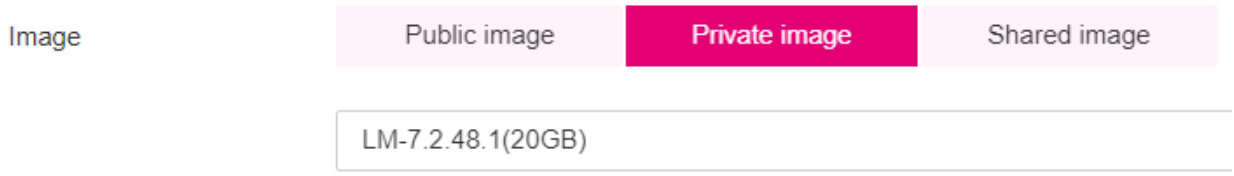
3. Click **Create ECS**.



4. Select the relevant **Region**.

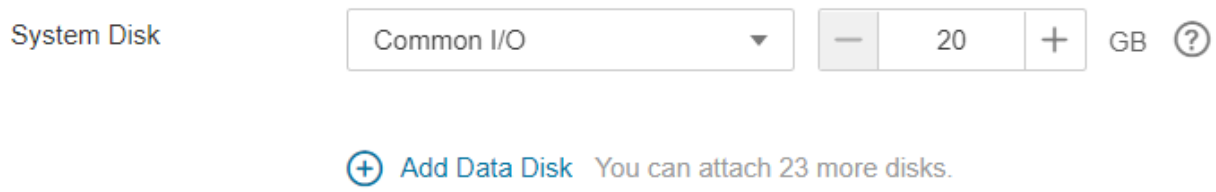


5. Select the relevant specification.



Note: Ensure to select a configuration with a minimum of 2 vCPUs and 2 GB of memory.

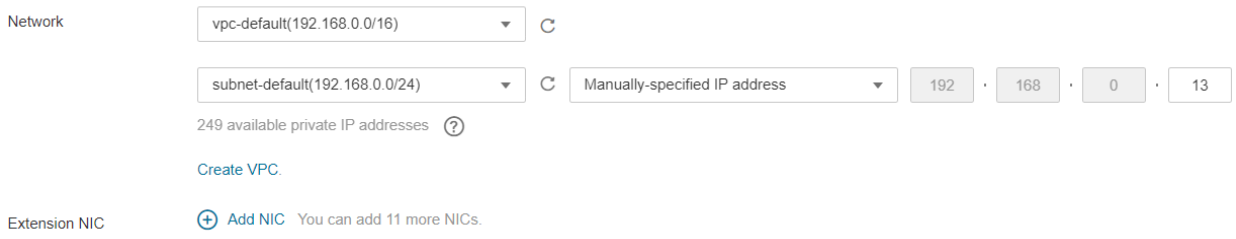
6. Select **Private Image** and select the LoadMaster image you have previously uploaded.



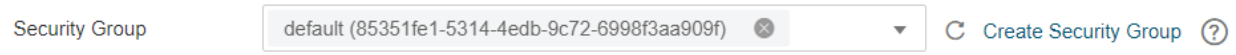
7. Enter the disk size.

Note: 20 GB is the recommended disk size. There is no need to add an extra disk.

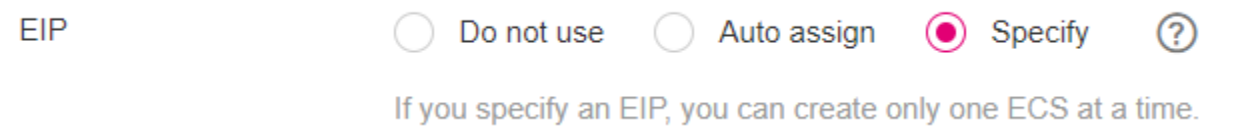
8. Click **Next: Configure Network** in the bottom-right.



9. Select the relevant VPC and specify the IP address details.



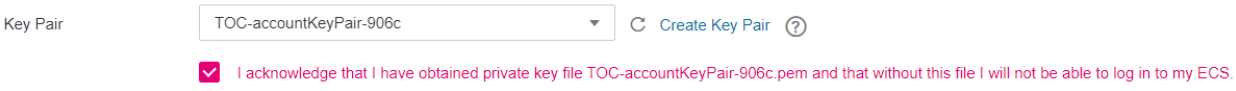
10. Select the relevant security groups.



11. Specify the relevant Elastic IP (EIP).
12. Click **Next: Configure Advanced Settings** in the bottom-right.



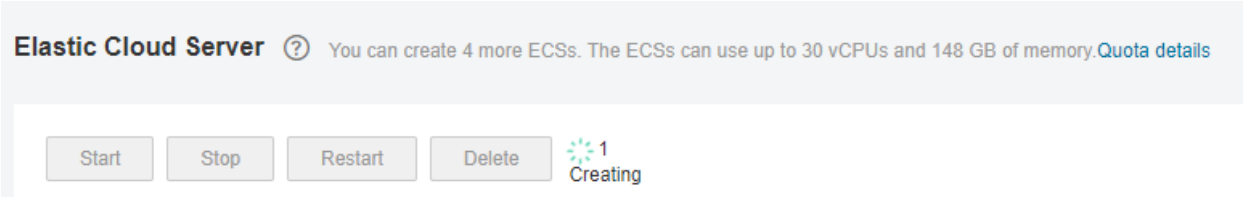
13. Specify an **ECS Name**.



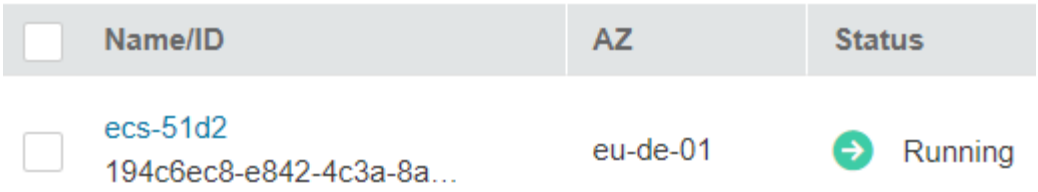
14. Select the relevant **Key Pair** (or create a new key pair) and select the check box.
15. Click **Next: Confirm**.



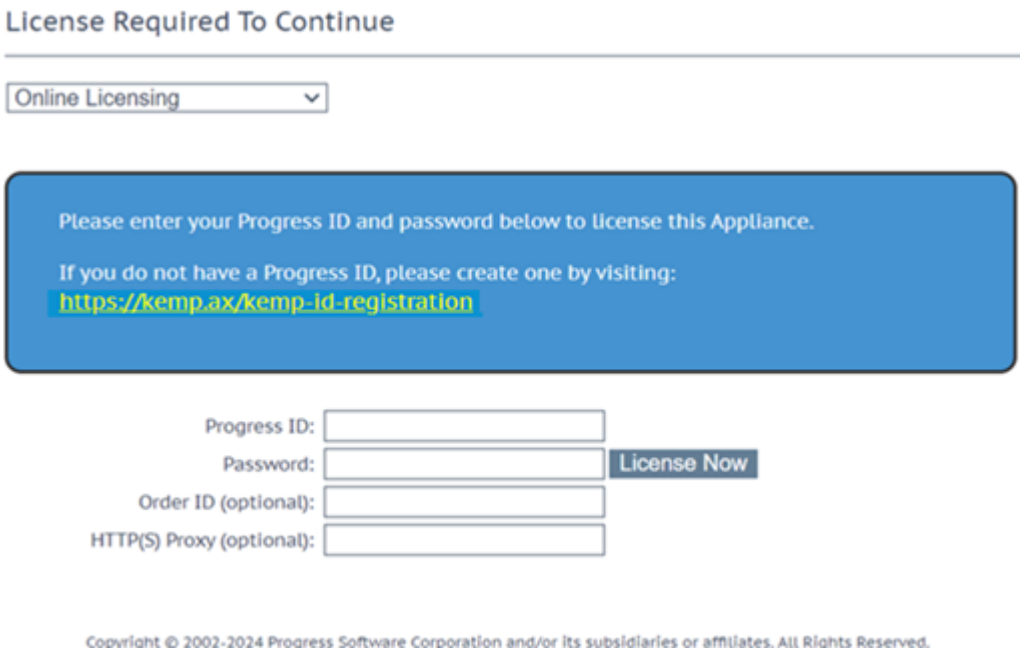
16. Confirm the settings and click **Create Now**.



17. Wait for the LoadMaster to be created. This can take a couple of minutes.



18. The **Status** changes to **Running** when the LoadMaster is created successfully.



19. Access the LoadMaster using the EIP by entering **https://<EIP>:8443** in the address bar.

For details on licensing the LoadMaster, refer to the Licensing Feature Description document.

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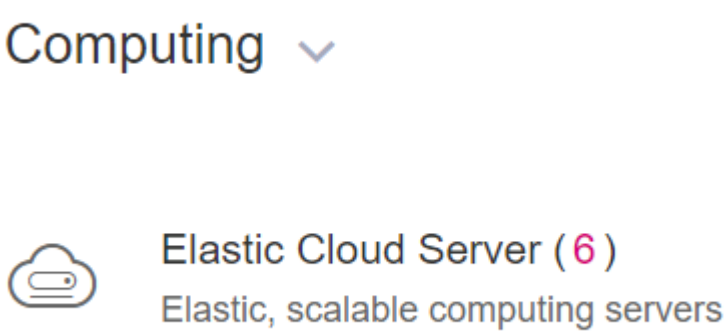
Shutting Down the LoadMaster

There are two ways to shut down the LoadMaster - using the OTC UI or the LoadMaster UI. Refer to the sections below for step-by-step instructions.

Shut Down using the OTC UI

To shut down using the OTC UI, follow these steps:

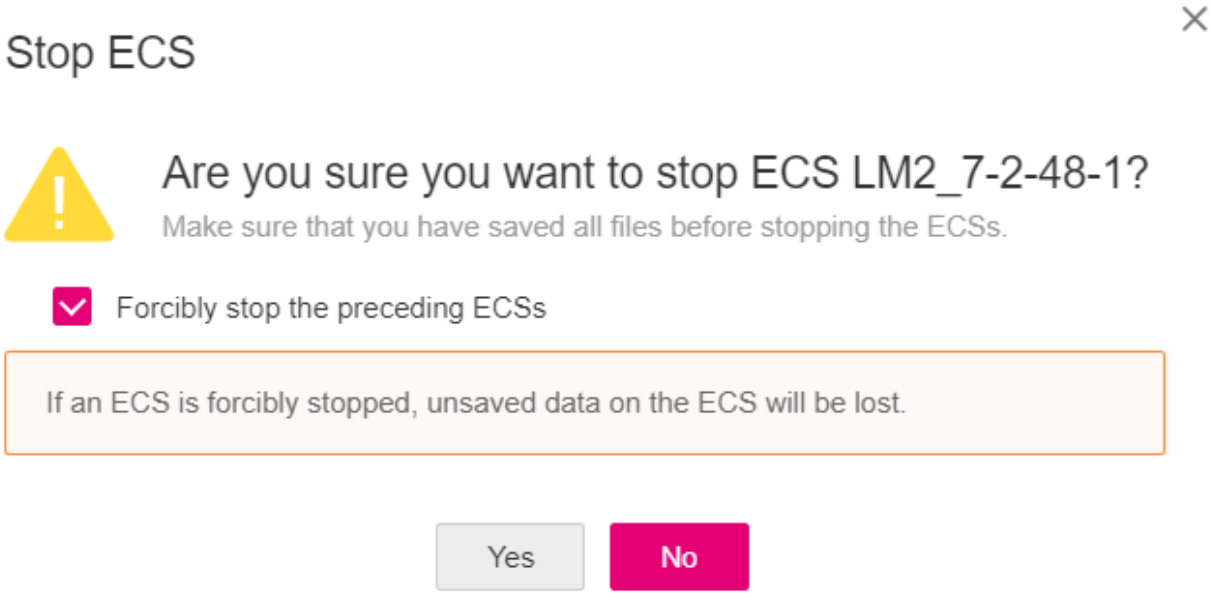
1. Log in to the relevant Open Telekom Cloud workspace.



2. Click **Elastic Cloud Server**.
3. Click the **Name/ID** of the LoadMaster to shut down.



4. Click **Stop**.

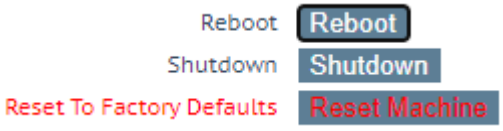


5. Select the **Forcibly stop the preceding ECSs** check box.
6. Click **Yes**.

Shut Down using the LoadMaster UI

To shut down the LoadMaster using the LoadMaster UI, follow these steps:

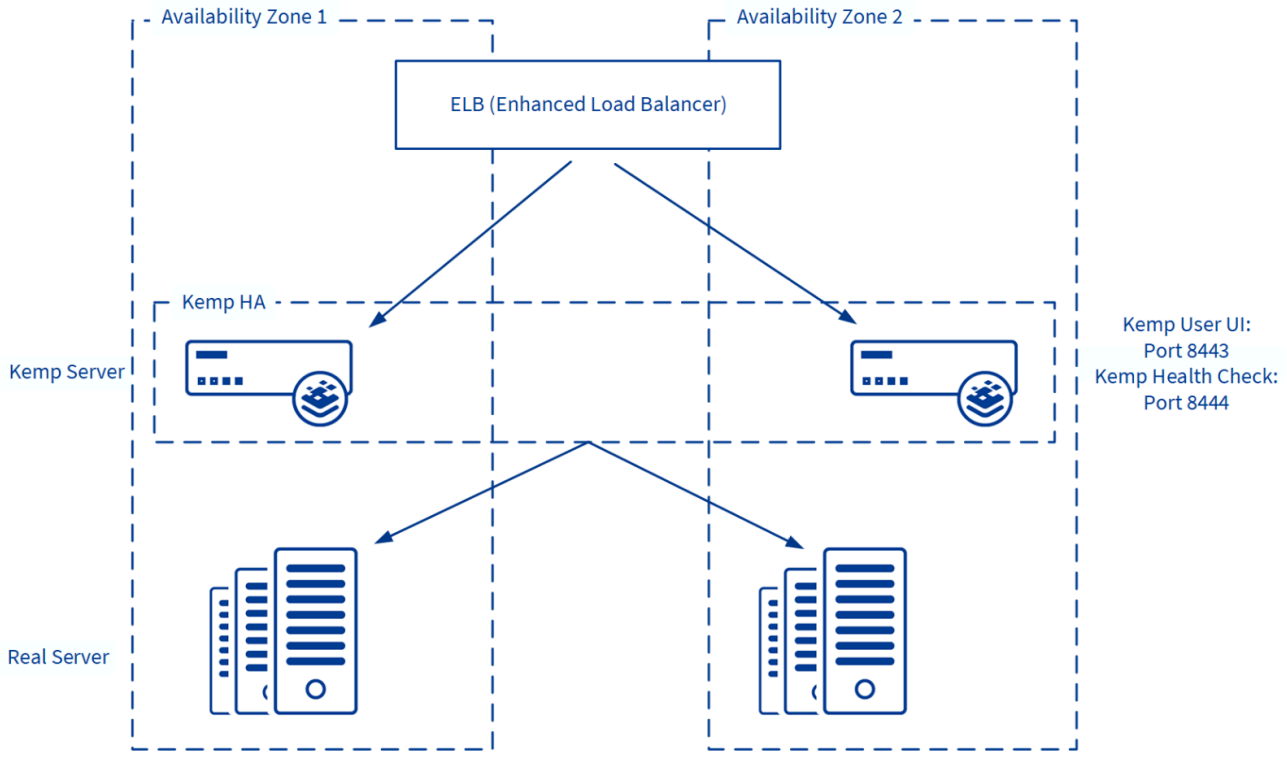
1. Log in to the LoadMaster UI.
2. Go to **System Configuration > System Administration > System Reboot**.



3. Click **Shutdown**.

5

High Availability (HA) Configuration



To set up HA, you must first configure the LoadMasters and then create an Enhanced Load Balancer in Open Telekom Cloud and add both LoadMasters as backend servers. For further details, refer to the sections below.

Configure the LoadMasters

To set up a HA configuration, follow the steps below:

1. First, deploy and license both LoadMasters following the steps in the Deploy a LoadMaster in the Open Telekom Cloud Platform section.
2. Access the LoadMaster using the EIP.
3. In the main menu, go to **System Configuration > OpenCloud HA Parameters**.
4. Select **First HA Mode** in the **OpenCloud HA Mode** drop-down list.
5. Select the desired option in the **Switch to Preferred Server** drop-down list:
   - **No Preferred Host:** Each unit takes over when the other unit fails. No switchover is performed when the partner is restarted.
   - **Prefer First:** The HA1 (active) unit always takes over. This is the default option.
6. Enter the internal address of the standby LoadMaster unit in the **Partner Name/IP** text box and click **Set Partner Name/IP**.
7. Enter **8444** as the **Health Check Port** and click **Set Health Check Port**.

   Note: The **Health Check Port** must be set to **8444** on both the active and standby units for HA to function correctly.

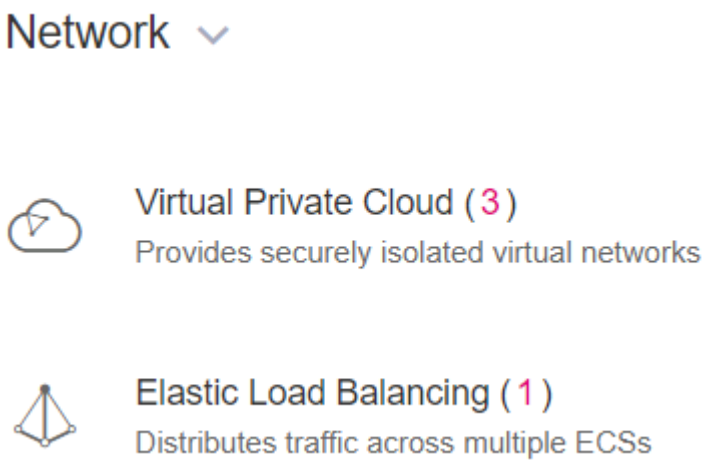
8. If using a multi-arm configuration, select the **Health Check on All Interfaces** check box.

   Note: If this option is disabled, the health check listens on the primary eth0 address.

9. Then, access the UI of the standby unit. Complete the same steps above in the standby unit but select **Second HA Mode** as the **OpenCloud HA Mode** instead.

Create an Enhanced Load Balancer

Now that the LoadMaster settings are configured, you must create an Enhanced Load Balancer in Open Telekom Cloud and add both LoadMasters as backend servers. To do this, access the Open Telekom Cloud workspace and follow the steps below.



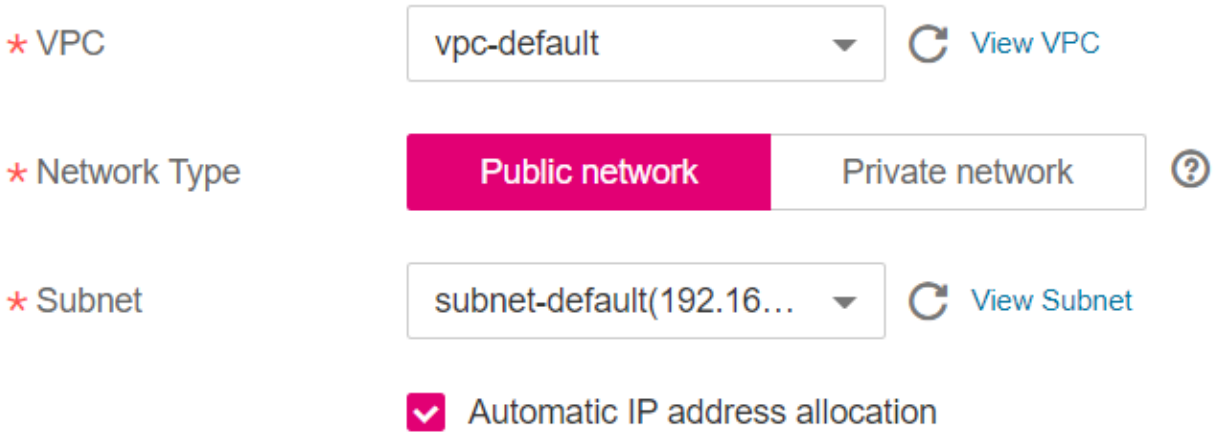
1. Click **Elastic Load Balancing**.



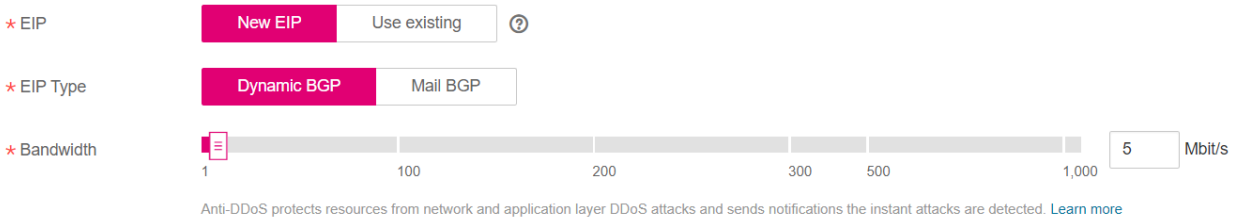
2. Click **Create Enhanced Load Balancer**.



3. Select the appropriate **Region**.



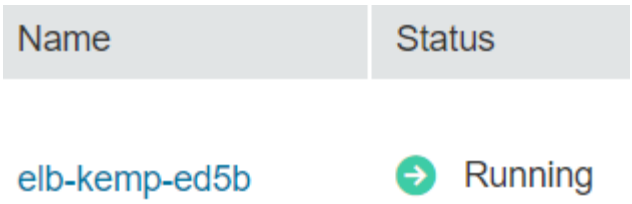
4. Complete the relevant settings, for example, select the correct **VPC** and **Subnet**.



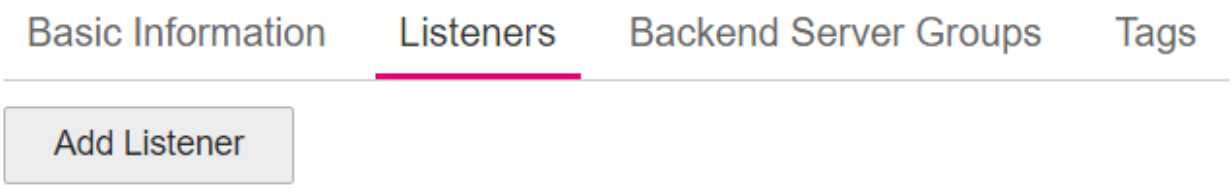
5. Select either a new or existing **EIP**.
6. If you selected **New EIP**, set the **EIP Type** to **Dynamic BGP** and set the **Bandwidth** to the required rate.



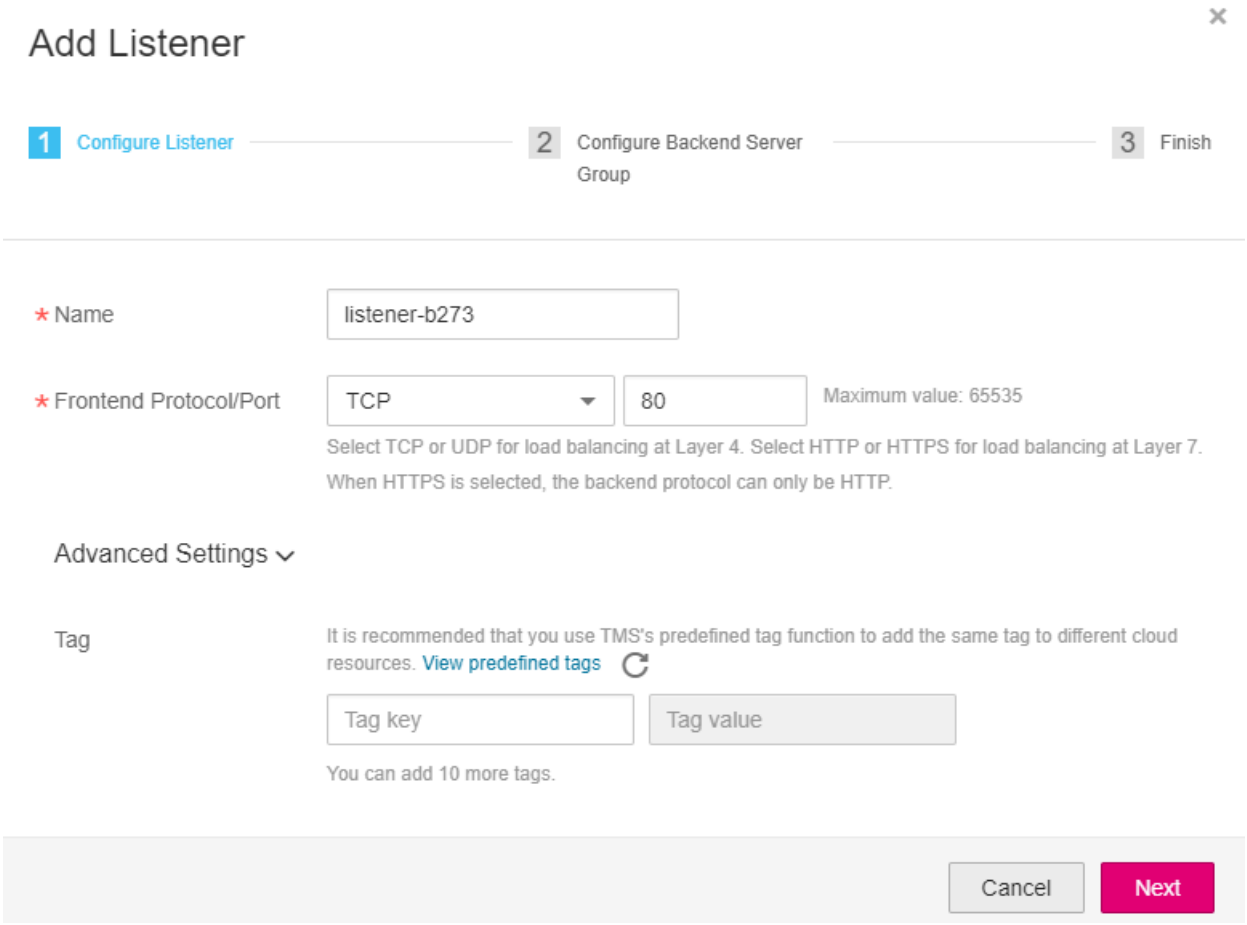
7. Set the **Name** to be used for the Enhanced Load Balancer.
8. Click **Create Now**.
9. Review the configuration details and click **Submit**.



10. Click the Name of the **ELB** to configure it.



11. Select **Listeners**.
12. Click **Add Listener**.

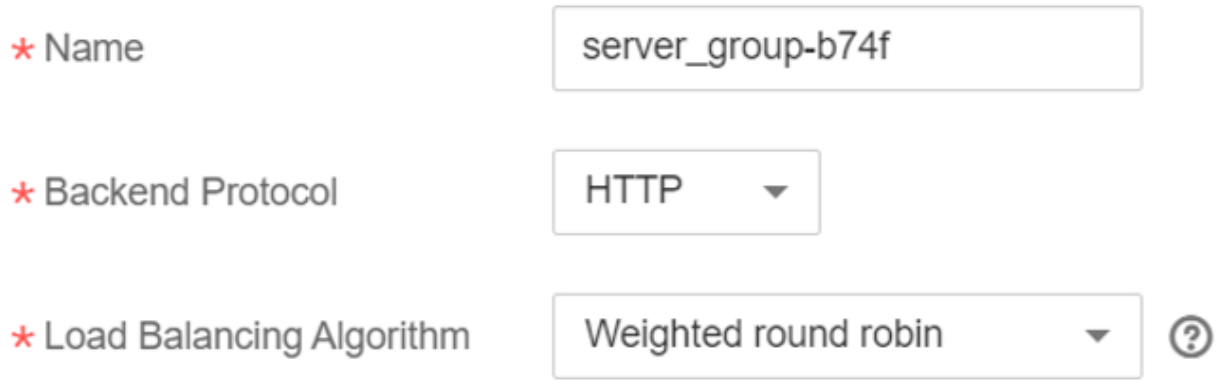


13. Specify the **Frontend Protocol/Port**.

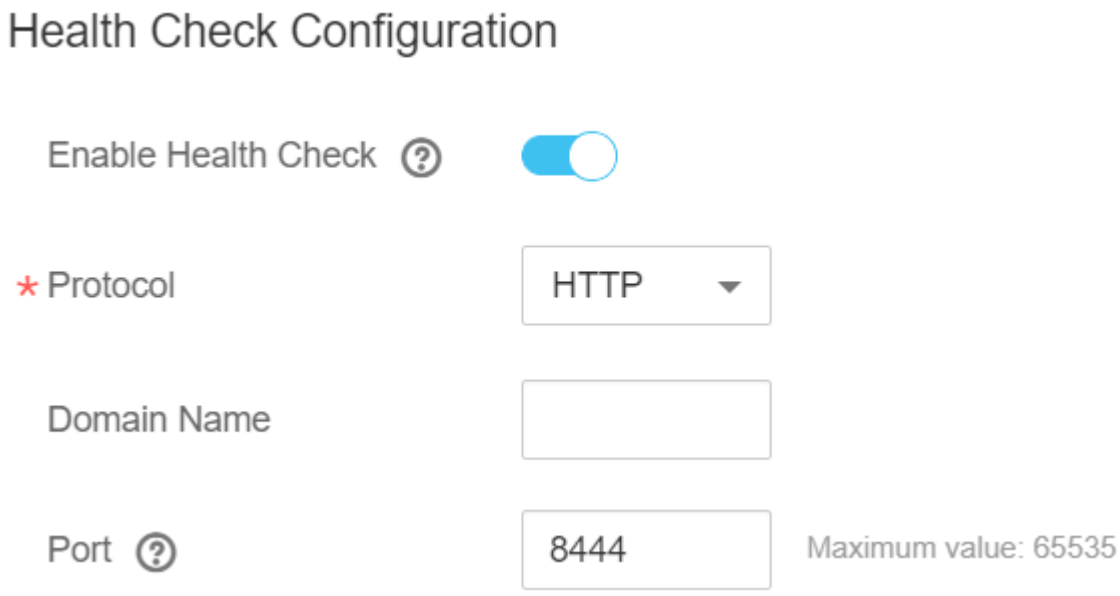
Note: Set up the listener to use the same protocol and port as the Virtual Service in the LoadMaster

configuration.

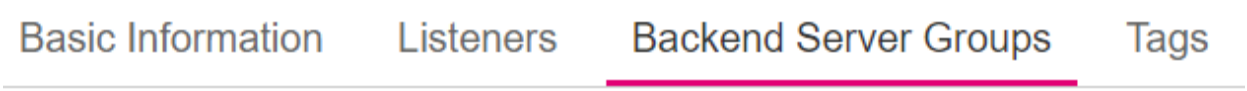
14. Click **Next**.
15. Either create a new backend server group or use an existing one. If creating a new one, follow the steps below. If you are using an existing backend server group, skip to the following step: Ensure Enable Health Check is enabled.



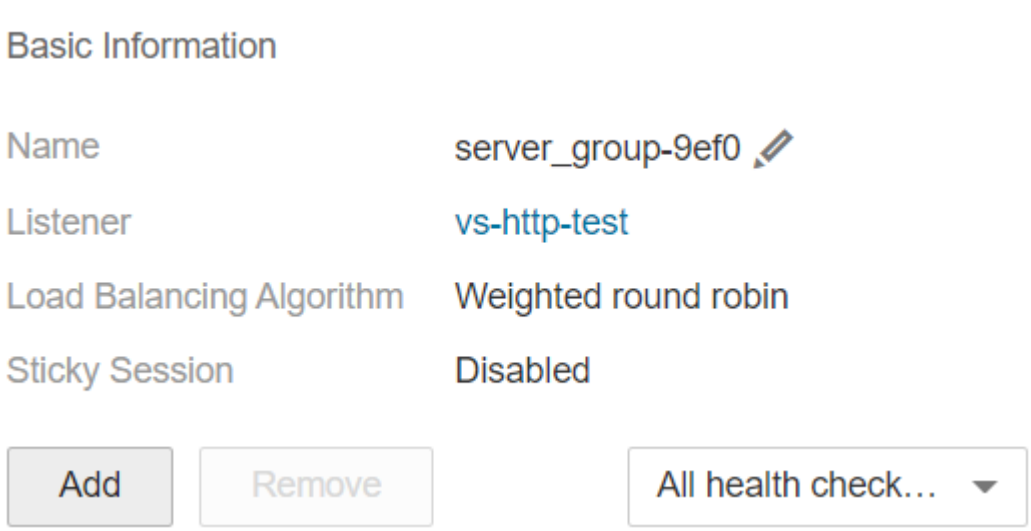
16. Set a **Name** for the backend server group.
17. Select **HTTP** as the **Backend Protocol**.
18. Select the appropriate **Load Balancing Algorithm**.



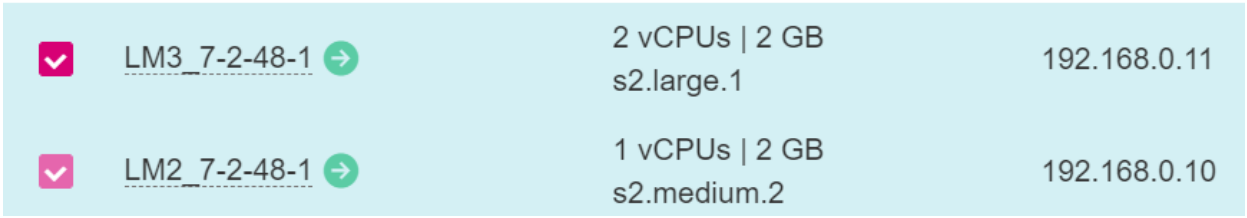
19. Ensure **Enable Health Check** is enabled.
20. Ensure to specify **HTTP** as the **Protocol** and **8444** as the **Port**.
21. Click **Finish**.



22. Select **Backend Server Groups**.



23. Select the relevant backend server group and click **Add**.



24. Select the relevant backend servers (LoadMasters) from the list. You can select multiple servers.
25. Click **Next**.
26. If you selected multiple servers, enter **80** in the **Batch Add Port** field.
27. Click **Finish**.

The servers are added and it will take a few minutes for the health check result to normalize.

Note: It is expected that the **Health Check Result** for the HA active LoadMaster will be **Normal** and the HA standby will be **Abnormal**.

After successfully following these steps, HA configuration is set up and you can confirm this by connecting to the Public IP (EIP) of the Enhanced Load Balancer using a browser **http://<EIPofEnhancedLoadBalancer>** and this should operate based on the **Load Balancing Algorithm** specified when following the steps above.

6

Best Practices for Backups

Hypervisor snapshots cannot be used to restore a LoadMaster to a working state. The best way to back up your LoadMaster settings is by using the native backup and restore facility in the LoadMaster WUI or API.

To back up your LoadMaster configuration, follow these steps:

1. In the main menu, go to **System Configuration > System Administration > Backup/Restore**.
2. Click **Create Backup File**.

You can create a remote host for automated backups using SCP to save backups to a remote server.

For further details on backing up and restoring the LoadMaster configuration, including certificates and cipher sets, refer to the following links:

- Backup and Restore Technical Note
- How to Create and Restore a LoadMaster Configuration or Certificate Backup

7

Open Telekom Cloud Community

For further help with Open Telekom Cloud, refer to the following link: https://community.open-telekom-cloud.com/community/?id=community_home